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On the Use and Development of the Pentatonic Scale Through the Works of Antonín Dvořák

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ON THE USE AND DEVELOPMENT OF THE PENTATONIC SCALE THROUGH THE WORKS OF ANTONÍN
DVOŘÁK

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
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Abstract

Concepts related to style change have been discussed thoroughly by theorists such as Leonard Meyer and others. In the case of Czech scholar, Antonín Dvořák, this change relates directly to his pentatonic style. While many musicologists suggest that the composer's travels to the United States in the early 1890's had a profound effect on the birth of his pentatonic style, this thesis posits that Dvořák's pentatonicism is apparent from even his earliest works. In examining evidence of this pentatonicism it becomes clear that, for Dvořák, there are two types: thematic and cadential.

Thematic pentatonicism arises from themes of works or movements which only include pitches found within the traditional Western pentatonic scale (scale degrees 1, 2, 3, 5, and 6). Cadential pentatonicism is more abstract in that it only makes an appearance during the close of phrases, sections, or melodic gestures. In these moments, often a rising or falling pentatonic scale will be heard in one or more melody instruments with a harmonic accompaniment that moves towards a tonic structure. In order to better understand and find these two factors, a corpus study was used along with various statistical and programming tools. The use of these tools allowed for a quicker and more thorough examination of various themes and figures for elements of pentatonicism. The results of this corpus study hint towards further research into the fields of pentatonic structure, Czech folk music, and the composer himself, Antonín Dvořák

Chapter 1. Antonín Dvořák and Style

Meyer and Style

In his pivotal work on musical style, theorist Leonard Meyer discusses many facets of how one can define, understand, and observe style in many different contexts. Meyer sets out to give the concept of musical style a thorough examination and to help understand what exactly is musical style, what defines style, and how style changes on multiple levels both on a cultural level and on that of an individual composer.¹ While Meyer does a wonderful job at explaining how musical style operates, this paper is more concerned with Meyer's discussion of style on the level of an individual composer and not on higher levels such as cultural groups or time periods. Meyer defines two types of factors that play a monumental role on affecting the musical output of a composer, external and internal. These factors affect how a composer approaches composition and explicitly cause the composer to write certain things in a certain way. The constraints created by factors these do not necessarily limit a composer's potential so much as it directs the path of thought that a composer might take while writing a piece of music. For instance, one possible factor would affect the decision of a cultural group to dismiss parallel fifths as errors in part-writing by implementing constraints on composers in that group to avoid this type of part-writing. Of course, Meyer would want it to be clear that this process is much more complex than described. The process can operate on multiple levels at the same time. In order to better understand how exactly these factors work it becomes necessary to define them.

¹ Leonard B. Meyer, *Style and Music: Theory, History, and Ideology* (University of Chicago Press, 1989). 3-135

As mentioned above, Meyer's two factors affecting how a composer writes music are named external and internal.² He defines external factors as those that exist outside the realm of a given parameter and can possibly have an effect of that parameter. In this case, the external factors of a given composer's style could be political events, natural upbringing and lifestyle changes, and aspects of culture. For instance, one could consider the political events of the Napoleonic wars as being external factors that affected Beethoven's style for a time.³ External factors can also affect a composer's style by pushing him or her to search for new techniques. Examples of this would be the growing exposure to different and far away folk styles as infrastructure technology increased or how wars between different cultures could evoke new ideas and concepts. These factors would then possibly cause the composer to try their hand at writing with these new folk styles or new concepts in mind. A wonderful example would be the Turkish topic of the 18th-century or the general growth of exoticism in the 19th- and 20th-centuries.

Conversely, internal factors could be considered as either much more abstract or simply more unique to a given individual or group. Internal factors constitute constraints that can be created by and placed on the individual himself. Internal factors typically deal with less physical restraints. In other words, things like a political climate or environmental changes are external factors and are typically things that a person could perceive on a physical realm while internal factors are changes related to the inner struggle of a composer such as his or her mental struggle with physical impairments (not unlike Beethoven's deafness) or changes in personality that might be brought about due to an increase in age or experience. This idea can be difficult to understand

²Ibid. 20-23, 106-109

³Ibid. 93

when discussing internal factors of concepts or events but in the realm of a composer's life it can be, as defined by Meyer, something as simple as the composer's temperament.⁴ Of course it should be noted that a composer's likes and dislikes, their personality, or even his or her potential mood all can act as internal factors that can place constraints on how a composer might create a work. Meyer gives an example of internal factors placing constraints on a composer as it relates to the instrumental works of Haydn. Over the course of his lifetime, Haydn's symphonic style could be described as ever-changing. According to Meyer, this could be attributed to internal factors in Haydn's life like the need to experiment and try new things.⁵ The important part here is the act of trying. Meyer makes it clear that internal factors often elicit change in a composer's output by way of trial and error. It could be said that such change is constantly occurring throughout Haydn's symphonic works as the composer adds more and more instruments and tries new techniques in both formal structure and in development of themes or motifs. Meyer also notes that internal factors can affect different aspects of a composer's style in different ways, at different times, or simply not at all if the composer's style can dismiss facets of the constraints placed by internal factors. In the case of Haydn, Meyer points to the difference in changing styles between his fairly dynamic symphonic style and static sacred vocal style.⁶ While the composer's temperament can be considered to be an internal factor placing constraints on his instrumental style that is causing Haydn to continually experiment, that same temperament is not placing constraints on his sacred vocal style (this is possibly because of internal factors related to Haydn's piety that would might not have allowed him to take freedoms)

⁴ Meyer, *Style and Music*. 106

⁵ Ibid. 111

⁶ Meyer, *Style and Music*. 110

After making clear the both the definitions and relationships of internal and external factors on compositional style, Meyer then describes the process in which a composer changes style over time.⁷ This process can take many forms and comes with many labels but each form arises from a relatively simple concept. A composer might approach a new style through such techniques as combination, permutation, and the other aspects of manipulation, aspects of simulation like imitation, and aspects of correlation like mimicry.⁸ For the purposes of this thesis, the specific definitions of each process is not as important as the fact that these various processes exist. It is important to understand that a composer can be affected by external and internal factors when they go to write new music and that the constraints placed on the composer by these factors can cause him or her to try new techniques over time through various processes of trial and error.

With these concepts in mind, this thesis will discuss the debatable origin of the composer Antonín Dvořák's pentatonic style. Firstly, it should be understood what is meant by the word "pentatonic". In the context of this thesis, and unless otherwise specified, all references of pentatonic or pentatonicism relate directly to the tradition Western anhemitonic pentatonic scale that makes use of scale degrees 1, 2, 3, 5, and 6 and no half step intervals. Below is an example of the Western pentatonic scale.



Ex. 1, Western pentatonic scale starting on C

⁷ Ibid. 116, 122-131

⁸ Meyer, *Style and Music*. 126

While many scholars of Dvořák would argue that his pentatonicism arose from a sudden onset of external factors presented during his travels to America, this thesis will discuss two alternative possibilities related to Dvořák's pentatonic style.⁹ The first possibility is that Dvořák's pentatonicism is present throughout his entire repertoire and simply becomes more apparent in his American works. The second possibility is that Dvořák's pentatonicism arose from external factors related to his Czech upbringing that lasted throughout the composer's entire life. In both cases, this thesis will argue that Dvořák's pentatonicism exists alongside the other aspects of his compositional style, primarily aspects related to "Czechness".¹⁰ This thesis will examine the possibility that pentatonicism is evident throughout Dvořák's career. Through this process, it will be possible to discuss the process through which Dvořák makes of pentatonicism itself. If we consider the idea that Dvořák is no stranger to pentatonicism upon arriving in the United States, then the thought arises that the external factors involved with this arrival could instead be considered aspects of the composer's continued process in refining and developing his pentatonic technique. This idea is not unlike the process taken in regards to Haydn's instrumental works as discussed above. Hypothetically, instead of Haydn suddenly developing the new technique of writing for horns upon visiting England for the first time, it would be argued that Haydn simply sped up or altered his process of gradually adding horns to his symphonies when introduced to English music.¹¹

⁹ Though that is not to say that these are the only possibilities.

¹⁰ Michael Beckerman, "In Search of Czechness in Music," *19th-Century Music* 10, no. 1 (1986): 61–73

¹¹ Note that this is merely a hypothetical example not meant to imply that Haydn's treatment of horns was, in any way, affected by his visits to England.

Dvořák and Pentatonicism

Perhaps the strongest element of what is considered to be “American” music at work in Dvořák’s pieces of the early 1890’s is the use of the traditional pentatonic scale. Main themes of many of the works written during this time contain distinctive figures of the major or minor scales while purposefully leaving out scale degrees 4 and 7.¹² While observations would suggest that this element in and of itself is not American alone, the pentatonic scale and its many forms are markers of folk style in various countries across the globe.¹³ Even with this in mind, many scholars have stated that these pentatonic elements are firmly American within this context, that Dvořák uses these pentatonic themes and melodies because he is trying to emulate American folk styles.¹⁴ This usage of pentatonicism is so thoroughly believed to be an American trait that researchers suggest arriving to America awakened in Dvořák a new tool for composition.¹⁵ While Dvořák seems to be using pentatonicism as a form of emulating the exotic elements of American folk style during these years, it could very well be argued that this technique serves an additional purpose outside of signifying “otherness”. While American pentatonicism most certainly had an effect on the composer, this effect was not so much one of discovery as one of affirmation. As we will see, not only was Dvořák introduced to a Czech style of pentatonicism early on in his life, he was also using the pentatonic scale in works even as early as his first chamber works and his very first symphony. With further study, it becomes even more obvious that not only was the composer using

¹² Such pieces include: *Te Deum*, *Symphony No. 9 in D Minor*, *String Quartet No. 12 in F Major*, *Suite in A Major*, *String Quintet No. 3 in E-flat Major*, *Sonatina in G Major*, *Humoresques*, *2 Pieces for Piano*, and to a lesser extent the *Cello Concerto in B Minor*, *String Quartet No. 13 in G Major*, and *String Quartet No. 14 in A-flat Major*

¹³ Tran Van Khe, “Is the Pentatonic Universal? A Few Reflections on Pentatonism,” *The World of Music* 19, no. 1/2 (1977): 76–84.

¹⁴ John Clapham, *Antonín Dvořák Musician and Craftsman* (New York: St. Martin’s Press, 1966). 87

¹⁵ Alec Robertson, *Dvořák* (London, UK: J. M. Dent & Sons Ltd., 1945). 103

pentatonic elements in his early works, he was even using pentatonicism as compositional techniques throughout his repertoire. Dvořák was purposefully crafting major thematic material upon the foundation of the pentatonic scale while also using the scale as a compositional technique to signify rest and tranquility in moments of tension or anger or closing of melodic ideas. It will be made clear that, while the pentatonicism at work in Dvořák's earlier pieces is of a different character than that of his American works and the pentatonicism that pervades his earlier pieces is typically much subtler in nature, these two techniques signify an overarching pattern of style change over time through possible external and internal. It should become clear that Dvořák's pentatonic style is at work constantly through his life but that external factors related to his travels to America as well as internal factors in the composer's handling of the technique cause specifically the purpose of this technique to change, not so much the manner in which it appears. In order to follow up on the evidence of external factors related to his travels to America, it becomes important that we examine when these factors appear and what exactly causes this shift in motive for the composer from traditional to non-Western styles.

From his Choral work written shortly after landing in the United States, *Te Deum*, through his Ninth Symphony and all the way until the completion of his 14th string quartet not long after returning to Czech lands, the pentatonic scale is used so often that it seems, to many, as if it had become an entirely new element in Dvořák's compositional toolkit. While examining these pentatonic elements, or more broadly, the use of general American folk styles in these works of the 1890's, scholars have produced a large wealth of material dealing with the subject of the American influence on this Czech foreigner. To say that the importance of the American folk music on the works of Dvořák is substantial is an understatement. Musicologists have spent much time

and effort in dissecting folk elements in his “American” works, specifically in his 9th symphony “From the New World”. Many of the ideas produced from this research include how Dvořák makes use of Native American elements. Such elements are evident in Dvořák’s discussion of his influences in his Ninth symphony. In referencing the similarities between American and Scottish folk elements, Dvořák had this to say,

...the music of the two races [African- and Native-American] bore a remarkable similarity to the national music of Scotland. In both there is a peculiar scale, caused by the absence of the fourth and seventh, or leading note. In both the minor scale has the seventh and invariably a minor seventh, the fourth is included and the sixth omitted.¹⁶

In a similar interview, Dvořák discusses how he made use of these two scale types in his Ninth Symphony as they relate to American folk songs.

It is this spirit which I have tried to reproduce in my new symphony. I have not actually used any of these melodies. I have simply written original themes embodying the peculiarities of the Indian music, and using these themes as subjects, have developed them with all the resources of modern rhythms, harmony, counterpoint, and orchestral color.¹⁷

Dvořák makes clear the similarities he feels between elements of American folk music and the folk music of European countries. Exactly what musical elements he is referring to is a little less clear. Musicologists like Michael Beckerman and John Clapham believe that he is referring to the presence of the pentatonic scale.¹⁸ Dvořák even goes a step further in stating that the similarities between Native American and African American folk songs all share those same traits with each

¹⁶ Clapham, *Antonín Dvořák Musician and Craftsman*. 87

¹⁷ Ibid. 87

¹⁸ John Clapham, *Dvořák* (London, UK: W. W. Norton & Co. Inc., 1979). 119

other and with European folk music, specifically that of the English isles. All of these influences together serve to fulfill the role of pentatonicism in the composer's various "American" works. As shall be discussed later, if the pentatonic scale does not hold a strong grip on the main themes for each of these works, it still serves a strong secondary role such as in Dvořák's *Cello Concerto in B minor* and his *String Quartet no. 14 in Ab Major*. The style of these works hold the possibility that internal factors unrelated to the external factors of American folk music could easily have played a role in how the composer dealt with pentatonicism at this time. In these two works (and, to a lesser extent, the String Quartet No. 13 as well) the homesickness for his dearly beloved Czech home, Vysoká, and therefore elements of Czech style come through much stronger than any other influences. These are just two possible (and powerful) factors that had affected the composer's style at this time in his life. Other factors not discussed include how Dvořák's job as a composition professor might have affected his style and how the sudden realization of the similarities in folk music between his Czech homeland and the United States could have changed the way in which he approached composition in other ways. All things considered, the bulk of the research done over Dvořák's style during this time period speaks of a kind of pentatonicism that is borne not of the composer's own homeland or even of his home continent but instead of the native people and influences of the post-Civil War United States. What seems to be missing in this research, and what will be discussed in this paper, is that Dvořák's pentatonicism is not so much a product of his time in the States as it is a combination of his own personal style with those very same influences. This combination can be explored further if one takes into consideration the structure of Dvořák's Czech style, a product of his traditional music training and elements of Czech folk music. Musicologist Michael Beckerman and others discuss many of the finer points of Czech folk style, much of which can be both found in Dvořák's music and applied to his Czech style.

Scholars' opinions on Czech music and Dvořák

Many scholars have written about how Dvořák's music can be considered Czech, but it is important that one defines exactly what is Czech music before a discussion of the finer points of Dvořák's style can take place. Some of the scholars that will be discussed include such people as Michael Beckerman, John Clapham, Jan Smaczny, Jan Lowenbach, and others. Of course, it could be argued that aspects of Dvořák's style within an individual work changes considerably based on the date of composition such as the case of his American works where much of the discussion is in regards to American influences on the composer (though some would argue his American works are more Czech than one would like to think). That said, there are many opinions and ideas in circulation concerning the topic of Czech music, or more specifically Czech pentatonicism, and in order to fully understand this concept it is important that each of these ideas are examined in turn. At this point it is relevant to examine markers of "Czechness" as presented by Beckerman.

While Beckerman has written extensively on the biographical history of Dvořák as well as the origins and features of many of Dvořák's American works, his work regarding defining stylistic features of Czech folk music is paramount to understanding the overall style of Dvořák. Beckerman has examined more broad Czech music concepts, where he has drawn a line between what is considered to be abstract elements of "Czechness", that include musical representations of the Czech people, and the more obvious stylistic features. According to Beckerman, the biggest deciding factor of what makes a piece Czech involves both the work's origin, representation of ideas, and later receptions. A prime example of a Czech work that includes these features is Dvořák's *Symphony No. 7 in D major*. The origin of this work, as described by Clapham, sees the

composer watching the trains coming in at the Prague station. Dvořák was filled with pride in his people as he watched his fellow countrymen returning from fighting abroad and it was this moment that caused Dvořák to come up with his idea of the Seventh Symphony.¹⁹ This is exactly the kind of origin that Beckerman would describe as a wonderful start to a truly Czech work. Dvořák continued to pour his pride in the Czech people into this work during its construction. Later, with performances of the work in England and other countries abroad, the work would be known in its reception as Dvořák's most "Czech" symphony.²⁰ The subtle characteristics at work within this piece help to fulfill abstract concepts of "Czechness" as posited by Beckerman. While it is much more difficult to discern these abstract concepts within a given work, Beckerman thankfully includes a list of features that work in tandem with the abstract. This list of nine stylistic features is not meant to define a work as "Czech" on their own but help to bolster the definition and fill in the more questionable gaps in understanding that are left by the abstract features. The list includes such features as:

¹⁹ Clapham, *Antonín Dvořák Musician and Craftsman*. 76

²⁰ Ibid. 78

Table 1. Stylistic features found in Czech folk music as posited by Beckerman.

Feature	Description or Example
1. First beat accent	As it relates to patterns of Czech speech and folk song
2. Syncopated rhythms	As it relates to Czech dances
3. Lyrical passages	Such as one would find in the trio of a scherzo
4. Harmonic movement outlining triads a major third apart	This includes movement from I-III, VI-I, vi-IV, etc.
5. Two-part writing involving parallel thirds and sixths	Noticeably more common in Czech music than one would expect in traditional Western writing
6. Oscillation between parallel major and minor modes	Often a passage of music will make use of scale degrees 3 and b3, 6 and b6, or 7 and b7 in the same phrase
7. Use of modes with lowered sevenths and raised fourths	Emphasis of scale degrees 5 and 6.
8. Avoidance of counterpoint.	Textures that are more hetero- or homophonic in nature
9. Use of melodic cells which repeat a fifth above	A motif of C-D-E might repeat a measure later as G-A-B

One point in Table 1 stands out especially when considering the topic of pentatonicism at hand. That is, point 7, use of modes with lowered sevenths and raised fourths. As we shall see later, this point may not apply to “Czechness” in Dvořák’s music as much as it may apply to other

Czech composers. In fact, none of the writers that have been encountered by the author thus far have made any mention of the use of Lydian fourths in Dvořák's music. It could even be argued that Dvořák seems to avoid the subdominant altogether as it relates to the structure of a melodic line. As will be investigated later, this is most certainly the case. Instead of using the subdominant, Dvořák will often ignore it in favor of melodic lines that favor thirds and sixths. In so doing, he would also eliminate the seventh from the line frequently in order to give the theme a more pentatonic sound. It should also be noted that many points of this table could easily describe non-Czech folk music as well as works by non-Czech composers.²¹ What is important about these points is that Czech music will often take advantage of nearly every point within a very small context. Once again, Dvořák's Seventh Symphony is a wonderful example of this. The primary theme of the first movement appears in the exposition making use of points 1, 4, 5, 6, and 8 within just one instance alone.



Ex. 2, *Symphony No. 7 in D minor*, mvmt. 1, minor instance of the primary theme

²¹ Beckerman cites Schubert and Brahms as composers who would fulfill many of these requirements but are obviously not Czech.

If one takes into consideration the entire exposition of this first movement, then all nine points can be found with varying degrees of frequency. Of course, while Beckerman's work in defining "Czechness" can help considerably in defining elements of Dvořák's style, it does not hurt to examine ideas posited by other scholars in regards to what constitutes Czech style.

Dr. Jan Lowenbach is primarily known for his work in advocating the music of the Czech composers who came in waves after the legacy of Smetana and Dvořák. These include composers of the first wave like Suk, Novák, and Janáček, as well as later generations like Bohuslav Martinů. What is important for this examination regards Lowenbach's discussion of these composers around the year 1935 and some of his comments regarding Czech music as a whole. From his writings, it can be seen that even in 1935 much of Europe was still ignoring Czech music. While this is not a surprise in and of itself, it is the reason for this ignorance that elicits some interests. Lowenbach makes it clear that it is the similarity between Czech music and Russian music that seems to be the root of this problem.²² Lowenbach distinctly mentions the Czech people's love for Russian music that began around the turn of the 19th-century with composers like Mussorgsky gaining much renown within Czech-speaking lands. According to Lowenbach, the Czech people were the first to "recognize Mussorgsky's genius".²³ Lowenbach does not write extensively about the stylistic features that are held between Russian and Czech music but others do discuss this relationship. The work of P. Kastalsky in 1924 entails the examination of "peculiar" elements of Russian folk music. What Kastalsky found is very similar to what Czech specialists have found in regards to Czech music. These findings involve the lack of subdominant and chromatic tones (in

²² Jan Löwenbach, "Czech Music of Our Days," *The Musical Times* 73, no. 1074 (1932): 710–12

²³ *Ibid.* 710

this case the seventh), and the use of major and minor intervals simultaneously within a melodic line (or the oscillation of major and minor modes). Already, these findings coincide both with the findings of Beckerman and with the idea of global pentatonicism as posited by Vietnamese musicologist Tran Van Khe. In fact, Kastalsky goes farther to mention the similarity in melodic structure between Russian folk music and that of “African or Asiatic tunes”.²⁴ Lowenbach does not give a lot of specific detail on the more stylistic features in common between Russian and Czech music like Kastalsky does. Instead, he focuses on the abstract similarities such as the power of the Czech/Russian people against oppression and adversity. Thankfully for this research, other scholars have taken a more detailed approach to these features.

Dvořák researchers like Jan Smaczny have also discussed issues related to vocal writing in the composer’s operas.²⁵ While Clapham and Beveridge both mention the history of revision in the operas, Smaczny makes clear the struggle, and therefore importance, of handling the Czech libretto in the mind of Dvořák. Composing music to work along with the Czech language was no easy feat. One of the biggest obstacles for the composer in matching music with the spoken dialogue was dealing with the strong natural accent at the beginning of sentences in Czech. Smaczny mentions that, although musical themes and phrases tend to begin with some sort of anacrusis or weak beat structure, the Czech spoken language tends to put a naturally heavy accent on the first syllable. It is because of these reasons that Dvořák had to wrestle with how to approach his operas in terms of thematic content. It is also because of this reason that many of his other Czech works, even those not for voice, include themes that do not start on an anacrusis.

²⁴ M. D. C., review of *Review of Peculiarities of Russian Folk-Music*, by P. Kastalsky, *The Musical Times* 65, no. 981 (1924): 999

²⁵ Jan Smaczny, “Dvořák, his librettists, and the working libretto for ‘Armida’,” *Music & Letters* 91, no. 4 (2010): 555–67.

Although Smaczny is able to show how difficult this was for the composer initially, like many other musical obstacles in his life Dvořák was able to overcome it with great success.

Many scholars agree on the point of the first beat accent as it relates to speech. This is due mainly to the linguistic nature of the Czech language which often starts sentences with a heavy spoken syllable accent.²⁶ This means that melodic lines of Czech composers do not often begin on an anacrusis but instead start on the first beat. Many of the features that seem to originate from dances, like the use of syncopated rhythms, can also be found within many of Dvořák's works. In fact, much discussion has been devoted to understanding the use of Czech dance idioms within various Dvořák pieces.²⁷ Scholars also agree with Beckerman on the oscillation between parallel major and minor modes though they may not describe it as such. Clapham describes this features as the use of major and minor intervals often within the same phrase.²⁸ The remaining features are not so readily agreed upon in the Czech musicological community, but that is not to say that they have ever been explicitly dismissed. As Beckerman suggests, it is more important that we consider the importance of these features in relation with the abstract elements of "Czechness" that, while perhaps difficult to find, are still widely agreed upon and recognized by the Czech musical community. Another scholar who has taken to finding Czech elements and pentatonicism in Dvořák's music is John Clapham

Perhaps one of the most well versed scholars on the works of Dvořák is John Clapham. Besides writing numerous articles and books on the history of both the composer and the origin of his works, Clapham also wrote frequently on Dvořák's own specific style and compositional

²⁶ Ibid. 558

²⁷ Beckerman, "In Search of Czechness in Music." 70

²⁸ Clapham, *Antonín Dvořák Musician and Craftsman*. 77

process. This of course would entail much discussion of how Dvořák developed his style. From the very beginning of his writings Clapham makes it very obvious that Dvořák was always pulling inspiration from his Czech background.²⁹ Clapham agrees with Beckerman and other scholars about the importance of Dvořák's Czech upbringing and how it influenced the composer to write in certain ways. In other topics, Clapham heavily discusses the peculiarities of Czech dance style within much of Dvořák's works including his Slavonic Dances. He mentions the importance of meter, rhythm, and tempo in regards to many of the dances found throughout the composer's works such as his *Slavonic Dances* and very single movement piano works.³⁰ In regards to pentatonicism or the alteration of scale degrees 4 and 7, Clapham turns towards statements specifically made by the composer while living in America. As mentioned before, Dvořák himself admits hearing distinctive scalar similarities between the sounds of Scottish and Native American music. These similarities, as mentioned previously, are the distinctive absence of scale degrees 4 and 7. In fact, the composer admits that the heavy pentatonic nature of his Ninth Symphony and other American works comes specifically from the embodiment of Native American music. While Clapham makes no contention to the point of pentatonicism alone, he does make it very clear that he is of the opinion that Dvořák's Ninth Symphony is indeed not American in nature but distinctly Czech.³¹ With the exception of pentatonic elements, it appears that the various opinions of the scholars discussed thus far seem to coincide with one another fairly well. All other elements are widely held to be good indicators of Czech style as long as they are found within the context of a work that embodies the Czech spirit.

²⁹ Clapham, *Dvořák*. 12-13

³⁰ Clapham, *Antonín Dvořák Musician and Craftsman*. 216

³¹ Ibid. 88

While the scholars discussed above have placed the largest emphasis on studying Czech style within Dvořák's music, there are some who give insight into the mind of the composer while presenting their own ideas of "Czechness" in Dvořák. According to H. Hollander, Dvořák gets most of his Czech sound from the type of person that he is.³² This is very much in keeping with the abstract concepts presented by Beckerman in his research and even more so suggests a strong inclination that internal factors played a larger role in the development of Dvořák's style than any external event. Hollander brings up the fact that Dvořák is "very purely and simply a man of the people, and a people's musician".³³ This is due substantially to the composer youth and young adult life. Having been raised as the son of an innkeeper and butcher as well as a town musician, Dvořák was able to see all aspects of the typical and rural Czech life. While still a child, Dvořák became very familiar with folk songs and dances of his fellow countrymen. Because of this, it is not terribly surprising that Dvořák would go on to incorporate these songs and dances within his music. Hollander also makes clear the distinction between Smetana and Dvořák as it relates to true "Czechness" within their music. Hollander places much of the true Czech spirit in the work of Dvořák who, even in his early years, embraced the Czech idiom and incorporated it wholly into his music. This is in contrast to Smetana who, in Hollander's words, "was in many ways a 'conscious' artist... He worked with his mind turned towards the West, with the result that his music quite noticeably took color from the ideas of the Liszt-Wagner circle".³⁴ While these statements would be considered highly debatable amongst the community of Czech research, it is the statement made about Dvořák in comparison that shows agreement with the same ideas of "Czechness"

³² H. Hollander, "Dvořák the Czech," *Music & Letters* 22, no. 4 (1941): 313–17.

³³ Ibid. 313

³⁴ Ibid. 314.

posited by Clapham, Beckerman, and others. Also, the case for a slow gradual change related to internal factors in the composer's life (his Czech nationalist spirit and passion for the Czech countryside) is helped by these ideas discussed by Hollander and the others. In terms of more obvious stylistic features, much of these ideas come from the above mentioned scholars.

Of all points of "Czechness" described by Beckerman, the one point that seems to have the most amount of contention and that has been discussed before relates to the altered fourth and seventh scale degrees. While it could easily be argued that Dvořák makes use of the Lydian-Dominant (use of lowered 7th and raised 4th) Czech modality in his Czech pieces, how is one to explain the composer's treatment of these scale degrees in his American works? Or even just his more traditional works? Perhaps it could be argued that Dvořák's move to strong pentatonicism in the 1890's is not the result of a sudden external change as it is a slow and gradual process that unfolds over the course of his lifetime. As will be examined in more detail later, the composer strongly and obviously makes use of the pentatonic scale in works written long before moving to America. Because of this, it is hard to imagine that the pentatonicism used in Dvořák's Ninth Symphony is simply a form of "otherness" or exoticism. In order to better understand both the role that pentatonicism plays in Dvořák's music as well as to eliminate arguments that the composer did not use pentatonicism before travelling to America it is important to understand where this technique could possibly have come from as well as what forms this technique takes over the course of Dvořák's lifetime.

Pentatonicism before America

By now, the topic of pentatonicism, or at least some form of modality, clearly exists within both the works of Dvořák and the works of Czech composers in general. Not only does Dvořák tend to

ignore the modal aspect that calls for use of Lydian fourths and flat sevenths, he also instead chooses to embrace pentatonicism fully through representation of Native and African American sounds in his American works. Even with these topics in consideration, it should be known that Dvořák is not actually as surprised by the elimination of scale degrees 4 and 7 as he appears to be in his interview. In fact, Dvořák uses the pentatonic scale quite often before coming to America. To be sure, his American works embody a true heart of pentatonicism unlike much of his earlier works, but it seems incorrect to assume that Dvořák was not already aware and had not already used the pentatonic scale in music long before this period. Dvořák begins using the scale as early as his first string ensemble works and continues to use the scale through his early period (1861-1876) and even until his last few works written before travelling to America (1877-1891), though it would seem that the composer exhausted much of his love for pentatonicism during his travels in the New World as the technique seems to die away in works after 1895 (or serve a different purpose at least). That is not to say that Dvořák does not use pentatonicism occasionally in these later works but, due to the nature of these pieces (tone poems and opera), and the programmatic topics covered by them (that are very heavily Czech), it would seem that pentatonicism, or at least the purpose it served, was not as important to the composer at this time. This is due in part to the way that Dvořák handles this technique outside of his American works. While pentatonicism in his American works seems to be fulfilling the role of “otherness” or exoticism, it would seem that the composer has a slightly different purpose for the technique when it appears in works written outside of this time. As shall be seen, the purpose of pentatonicism in his earlier works seems to be to fulfill the role of easing tension or to help the closing of ideas not unlike a cadence. In order to better understand the progression of Dvořák’s pentatonic style throughout his lifetime it is

important to distinguish between the two forms of pentatonic technique at work within the composer's repertoire: cadential and thematic pentatonicism.

The technique of cadential pentatonicism, a term created by myself, can be best described as any instance of impending closure in a work that is facilitated by the appearance of a falling or rising pentatonic scale in one or more melody instruments typically above homophonic or, simply, reduced accompaniment. Not only is this technique apparent within Dvořák's repertoire long before 1891, it also seems to be the more common of the two (if one considers sheer number of occurrences). There are examples of cadential pentatonicism as early as his *Symphony No. 1 in C minor* in which Dvořák, for a moment in the fourth movement, has the strings play a descending C major pentatonic scale all together.



Fig. 2, *Symphony No. 1 in C minor*, mvmt 4, cadential pentatonicism in the strings. Scale degree 4 outlined in red above in the violas indicating some elaboration of cadential pentatonicism

In regards both to the above figure and to the topic of cadential pentatonicism in general some important points should be noted. This small passage occurs near the very end of the movement and acts as a cadential gesture. This moment of closure appears just before the final

cadence and only lasts for a few measures. During these measures, the entire orchestra is playing while the strings perform a moment of cadential pentatonicism below the other instruments. Cadential pentatonicism is simply a closing gesture that will typically have the melody instruments (though it could be other instruments) play a descending or ascending pentatonic scale as the accompanying instruments harmonically approach a cadence (I.E. a IV-V-I progression or something similar). It should be noted that the appearance of the pentatonic scale does not have to either strictly ascend or descend, it can do either both or just appear within the span of a single octave. In nearly all cases, the instrument(s) playing the pentatonic scale will purposefully avoid scale degrees four and seven but the appearance of these scale degrees is permissible on a case-by-case basis (typically when their appearance is on a structurally weak beat or if they appear as an insignificant passing/neighbor motion or ornamental figure). The example above fulfills all aspects of the definition of cadential pentatonicism. Firstly, while typical examples of cadential pentatonicism are completely pure in form, the above example is also a great example of cadential pentatonicism with some elaboration. The violas above stay mainly within C major pentatonic until the very last few notes where they land on scale degree four for a brief moment. Within the scope of this example this moment of traditional diatonicism can be described as a moment of elaboration upon the pentatonic scale. The appearance of scale degree four in this context is so brief and is covered up by so many other instruments that the validity of cadential pentatonicism within these measures should not be questioned. If we consider this topic further, it shall become clear that Dvořák has no qualms with including the diatonic scale degrees in the accompanimental harmonies underneath these falling pentatonic lines. Because of this, if one were to consider only the violins as the melody lines and the rest of the strings as accompaniment, the appearance of scale degree four is simply a member of the harmonies implied by the accompaniment. Other

facets of cadential pentatonicism not explicitly encountered in the above example is in regards to where the technique can be found. Though the name of the technique implies its location to be found at cadence points, it is important to treat its location more broadly in that it can appear in any situation that elicits a sense of closure or a closing gesture. This means that Dvořák will not only employ the technique at cadence points within phrases but also at the end of movements, the end of sections, or even the transitions or modulations surrounding sections and themes. An instance of cadential pentatonicism can also vary in length. The above figure is an instance of cadential pentatonicism that lasts only for two bars and is played at a fairly fast tempo but there are plenty of examples of the technique appearing in slow movements and lasting for multiple bars. Thematic pentatonicism has a slightly more refined definition.

Instances of thematic pentatonicism are exactly that, moments where the theme of a movement or section is only made up of pitches in the pentatonic scale. A perfect example of thematic pentatonicism comes from Dvořák's *Symphony No. 9 in E minor*, mvmt. 2, where the primary theme of the movement is based solely within the pentatonic scale. It is in this determination of thematic pentatonicism where this paper will utilize a corpus study to help provide evidence to support my thesis. Here, through use of the Humdrum toolkit, access to all themes by Dvořák (a topic that will be discussed at length later), and empirical methodology, it will be possible to see if there is a statistically significant change in the amount of pentatonic themes encountered in Dvořák's works dating from 1891-1895. While the methodology used in determining this change is covered in more detail later, it does not hurt to discuss what exactly will be considered a pentatonic theme. For the purposes of the corpus study, an instance of thematic pentatonicism occurs when a theme in a movement contains at least all pitches of the pentatonic

scale, and does not have more than 15% of pitches where are either chromatic or are scale degrees 4 and 7.³⁵ The reason for this percentage metric is to include those pentatonic themes that might include either diatonic or chromatic ornamentation. More details of the precise identification of thematic pentatonicism is covered in a later section.

The purpose of dividing aspects of Dvořák's pentatonic style relates directly to this paper's thesis. By arguing that Dvořák's cadential pentatonicism is an aspect of his pentatonic style which does not change over time and that his thematic pentatonicism increases gradually until 1891 several points will be addressed. Firstly, by providing evidence of pentatonicism before travelling to America it should become obvious that Dvořák was not only aware of pentatonicism, but he openly embraced the possibilities of its usage. Of course, while it is important to recognize the existence of Dvořák's pentatonic style before travelling to America, it is also important that this style is understood as best we can. By examining further the gradual change in usage of thematic pentatonicism across the composer's life, it will be possible to better understand how it is that we have attributed this powerful aspect of Dvořák's style to a sudden outgrowth of exposure to external factors related to exoticism and the need to invoke a feeling of "otherness". It is for these reasons that this paper will examine evidence both of the stable trend of cadential pentatonicism as well as the gradual change in thematic pentatonicism within Dvořák's works

³⁵ I understand that this is tautologous, and is bordering on double-use data, but this study is primarily exploratory in nature. It was not possible to create a trial sample out of the Dvořák data due to its small size.

Chapter 2. Cadential Pentatonicism

Examining Cadential Pentatonicism

Before discussing the many examples of cadential pentatonicism within Dvořák's repertoire it is perhaps best to examine, in more detail, what are some of the composer's more prototypical examples of the technique. The most normalized appearance of cadential pentatonicism occurs in his *Romance for Violin in F major*.



Fig. 6, *Romance for Violin in F minor*, descending cadential pentatonicism in the solo violin outlined in red

This example fits many of the standards discussed relating to Dvořák's usage of cadential pentatonicism in his *Symphony No. 1 in C minor* but with some differences. Firstly, this moment in his *Romance* occurs precisely at the end of the primary theme and is only accompanied by whole tones without distractions that would take away from the emphasis on the pentatonic scale. That is to say, this instance of cadential pentatonicism is sorely exposed and very prominent, a stark difference from the example from his First Symphony but altogether more representative of how Dvořák will typically make use of this technique in that it appears without heavy accompaniment or additional textures, is a perfectly descending form of the scale (even with the small ascent at the end) and extends the cadence perfectly. Also, it is important to note the completeness of the pentatonic scale in the *Romance* example. While the example from Dvořák's First Symphony does include all pitches of the pentatonic scale, here (and more typically in general) Dvořák emphasizes the tones of the scale by playing through each of them multiple times in an almost arpeggio-like

figure. There are other features that contribute to significant aspects of cadential pentatonicism within this example. Often, Dvořák will only include instances of cadential pentatonicism when the movement or section of the piece allows it musically. This means that, in exceptionally dark or melancholy pieces, cadential pentatonicism will not make an appearance. Likewise, pieces that already include heavy thematic pentatonicism (his Ninth Symphony for example) will often have very little or subdued examples of cadential pentatonicism. In both cases, the lack of pentatonicism could be attributed to the role that the technique is meant to fulfill. The purpose of cadential pentatonicism is to ease or reduce the build-up of tension either during transitional periods or simply at the close of a musical idea that has been growing through the preceding musical section or phrase. If, for whatever reason, the composer does not wish to eliminate that tension, he will not allow cadential pentatonicism to make an appearance. Conversely, if Dvořák feels as if not enough energy (or not the right kind) has been created that warrants the use of cadential pentatonicism then he will not make use of the technique. Through an examination of the role that cadential pentatonicism plays within Dvořák's pentatonic style as well as the form in that this technique takes, it is possible to better understand both the intricacies of his compositional style in general as well as factors that might be placing constraints on the development of the composer's style. Finally, before discussing the works that will be examined in relation to this technique, it cannot be stressed enough that the rate of usage of this technique is relatively constant throughout his repertoire and that this constant rate of pentatonic usage affects our impression of how Dvořák's pentatonic style has progressed over his lifetime.

For the purposes of both narrowing the focus of this discussion and allowing for a closer analysis of the pieces to be observed, it is necessary to limit the amount of explored works. With

this in mind the pieces to be examined should be works that are considered important works within Dvořák's repertoire. Perhaps the most important works include at least the composer's symphonies and so they will be examined very closely for instances of cadential pentatonicism. Also, much of Dvořák's more popular works include his chamber works, especially his string quartets, and so, many of the works of this genre will be included. Other miscellaneous works to be involved are works that are considered to be excellent representatives of Dvořák's Czech style. This includes his *Slavonic Rhapsodies* and *Dances*, his *Czech Suite*, his various *Serenades*, his *Concert Overtures*, his concertos, and his symphonic poems to name a few. This list includes nearly all of the composer's large scale works, most of his chamber works, and an important percentage of his smaller works for piano or solo instruments. Finally, in order to help prove the point that Dvořák uses pentatonicism long before travelling to America, the pieces will be examined in chronological order as much as it seems relevant to do so. The works are split into three periods within Dvořák's repertoire: his early works starting from his *First Symphony* and ending with his *Fifth Symphony* and his first religious work, *Stabat Mater* (1865-1877), his middle pieces take over from *Stabat Mater* and his *String Quartet No. 9* and last until his American works (1877-1891), and his last period includes his American works and his symphonic poems (1891-1898).

Symphony No. 1 in C minor

This first few works from the above list to be examined include some of Dvořák's very first compositions: his *Symphony No. 1 in C minor*, his *String Quartet No. 1 in A major*, and his *String Quintet No. 1 in A minor*. As would be expected, each of these works exhibit the style of a growing composer and as such have their own issues. Even with this in mind, Clapham and others readily agree that the composer's *First Symphony* is still one of his more famous and well-received

works.³⁶ Of the two string ensemble works, both include examples of cadential pentatonicism with some degree of frequency. The fact that these works both pre-date his *First Symphony* and that they include example of pentatonicism are impressive all on their own. Dvořák's *First Symphony* is a little bit more controlled than that of his first string works, at least in terms of pentatonicism. The composer ignores any and all facets of pentatonicism throughout the entirety of the first three movements. It isn't until the fourth movement that Dvořák begins to take advantage of the technique. For the most part, this movement's inclusion of pentatonicism comes from its heavily pentatonic primary theme, but there is one moment near the very end of the fourth movement where an instance of cadential pentatonicism is able to break through. While this one instance is heavily obscured by the pounding brass above it, the line played by the strings can still be heard and is an excellent example of cadential pentatonicism within Dvořák's works.



Fig 2, *Symphony No. 1 in C minor*, mvmt IV, cadential pentatonicism within the strings

As can be seen in Fig. 2 above, the entire string section takes part in a descending run of the C major pentatonic scale for two measures. As mentioned before, the brass appears in full force during these measures so much of what the strings are playing seems to be absorbed by the sheer volume of sound. Even so, with this example it is obvious that Dvořák had to have known

³⁶ Clapham, *Dvořák*. 23.

about the existence of a mode that does not include scale degrees four and seven. If that is somehow not the case, the only other explanation is that the composer just happened to stumble upon a descending melodic figure that has all the elements of a C major pentatonic scale. The fact that this figure continues for two entire measures and is not some tiny snippet of a motivic idea shows that Dvořák most definitely intended to write the figure as it appears, thus disproving any notion of “beginner’s luck”. Finally, it should be mentioned that this figure descends until all strings land on a C major chord, the primary key of this movement and parallel major of the entire symphony as a whole. While this is not the final cadence of the piece, it is obvious due both to heavy metric accent and the tonic nature of the chord that Dvořák means for this measure to be a cadence or closing point of some kind. Another important feature of this example is how the strings descend the pentatonic scale. This falling appearance of cadential pentatonicism is perhaps the most common form of the technique. This is followed by an ascending version of cadential pentatonicism which, while not totally infrequent, is quite rare and a form of cadential pentatonicism that seems to stay within an octave range that neither wholly rises or falls. This last form of cadential pentatonicism is quite rare and, in fact, only appears a handful of times within the composer’s entire repertoire.

While the above is a great example of Dvořák’s cadential pentatonicism there are a few aspects of this passage that stand out compared to what is the more typical form of cadential pentatonicism. Firstly and most typically, the texture is very heavy during these measures which can and does cloud much of the pentatonicism at work within the strings. Typically, Dvořák allows for the instruments performing the pentatonic line to stand out much more either by allowing for only those instruments with accompaniment or by having only a small group of instruments

playing. Also, while not strictly more typical than this instance, Dvořák does create this pentatonic line frequently in quieter moments either near the end of a subtler movement or within a piece that does not have as much strength and power as a symphony.

Symphony No. 2 in B-Flat Major

Moving ahead brings the discussion towards Dvořák's *Symphony No. 2 in B-flat major*, and his second through fourth string quartets. Dvořák is still a young composer during this time in his life but these works bring up some important aspects of pentatonicism. One could completely ignore the very heavily pentatonic thematic material of the first movement of his *Second Symphony* and not be at a loss for evidence of pentatonicism within these works. That said, the first movement of this symphony does not have an explicitly strong moment of cadential pentatonicism, at least not so in the way presented by his *First Symphony*. Instead, Dvořák is able to make the main thematic and motivic ideas flow very well into cadential moments. If this were the composer's first attempt at writing such a large-scale work it could be argued that this example would serve as an early form of the cadential pentatonicism that would follow Dvořák well into his later years. Instead it would seem that this is an attempt by Dvořák to experiment with other ideas or just to expand his ability to develop motives.



Fig. 3, *Symphony No. 2 in B-flat major*, mvmt. 1, primary motif in reduced texture.

Just as before, Dvořák has no problem incorporating non-pentatonic elements into the harmonies underneath the melodic line. Fig. 3 serves a dual purpose as both the basic idea of the primary theme and the closing idea that precedes most of the cadential moments within this

symphony. This is one of the few examples of cadential pentatonicism that blurs the line between thematic function and cadential technique. The following movements of the symphony are absolutely rife with cadential pentatonicism. The main culprit in this case is the second movement which, while very dark in nature, relieves the audience with very relaxing moments of cadential pentatonicism almost as a means of shining light on a very melancholy place. Each of these examples are performed by only one or two instruments amongst either very light or very quiet accompaniment and while most of the examples fit all of the standard definitions of cadential pentatonicism, there are a couple within this movement that do not end after the cadence but continue onwards sort of as transitional material.

The image shows a musical score for the second movement of Symphony No. 2 in B-flat major. The score is for a woodwind and horn section, including Oboe I & II, Clarinet I, II, B, Bassoon I & II, Horn I, II, F, and Horn III, IV, B. The clarinet part (Cl. I, II, B) is highlighted with a red box, showing a rapid arpeggiated figure. The score includes various dynamics such as *pp*, *fp*, and *p*.

Fig. 4, *Symphony No. 2 in B-flat major*, mvmt. 2, pentatonic arpeggio in clarinets as transitional material outlined in red above.

The third movement of this symphony also contains highly pentatonic themes and the fourth movement has a highly pentatonic secondary theme that helps lend to the idea that this symphony as a whole contains a high amount of thematic pentatonicism. Unfortunately, while both movements stress pentatonicism, neither has any strong examples of cadential pentatonicism and therefore will be left to serve as evidence for the corpus study.

Through Dvořák's string quartets 2-4 it can be seen that the composer is still growing and developing his skills in chamber music. While Dvořák was able to produce great works from the very beginning in terms of the symphony and smaller piano works, it took him a little while to develop his own true sound in the chamber ensemble. His *String Quartet No. 2 in B-flat major* contains a few elements of pentatonicism but none are worth examining closely as indicators of cadential pentatonicism. This is mainly due to their very concealed nature and their overall shortness of length. Much of Dvořák's *String Quartet No. 3 in D major* is in a very similar vein. While the piece contains moments of pentatonic figures they are too few and too sparse to really call them true examples of cadential pentatonicism in this work. This could still be due to the composer working on developing his compositional skills over using special techniques. Dvořák's *String Quartet No. 4 in E minor* continues this trend of musical growth. This is the last quartet that seems to be bundled around the same period in his life as the *Second Symphony* and markedly does not contain any pentatonicism at all. This is most probably due to the heavy minor aspect of the piece but the absence of pentatonicism still warrants consideration. This is the first work examined thus far that is completely devoid of pentatonicism even from small motivic figures. Rather than proving that Dvořák was not aware of pentatonicism at this stage in his life, it should be considered that the purposeful lack of pentatonicism in this work means that Dvořák must have been very intentionally incorporating pentatonicism and not just stumbling upon "good sounds". The distinct lack of any element of pentatonicism within the piece due to the minor context of the work must mean the Dvořák was considering his musical options very heavily and choosing different techniques and sonorities that would fit well with what he had in mind and because this is not a relaxing or simple piece, Dvořák does not feel any reason to include the restful cadential pentatonicism that has been used in pieces before.

Symphony No. 3 in E-flat Major

So far, it seems that Dvořák is doing what many composers before him has done, allowing himself to grow and take risks with his chamber pieces while reserving his symphonies for his stronger more well-developed techniques. Each symphony discussed thus far has examples of cadential pentatonicism within them while only the first couple of string ensemble pieces have had any sort of pentatonicism at all. Before discussing Dvořák's *Third Symphony* it should be made clear that Dvořák's *Romance for Violin in F minor* will also be examined. This is due in large part because of the perfect examples of cadential pentatonicism found within the piece.

Dvořák's *Symphony No. 3 in E-flat major* continues the composer's trend of outstanding symphonic works and wonderful examples of Dvořák's unique sound and style. In examining this symphony one could almost be led to believe that Dvořák has forgone pentatonicism for the entire work. For his own reasons, Dvořák does not include any pentatonicism within the first movement. The second movement has a much more melancholy atmosphere until the March section. In typical ABA form, the depressing section returns after the March and Dvořák spends quite a long time drawing out an almost agonizing cadence serving a dual purpose as a close to melodic material and end to this movement. Right at the very close of the piece, a momentary ray of light shines down possibly foreshadowing the happiness and dancing quality of the upcoming third movement. In this moment, Dvořák has the strings and harp playing a quiet melody underneath a slow restatement of the March theme in the horns. If one is not paying attention, it is easy to miss the pentatonic qualities in the line running underneath the horns. As this section is mainly closing cadential material, it becomes clear that Dvořák is using the strings to create an elaboration of the cadential pentatonicism that he has used in his previous two symphonies. This section lasts several

measures until the end of the movement and while there are moments when Dvořák decides to include an occasional scale degree 4 or seven, the section is almost completely pentatonic, providing a wonderful example of cadential pentatonicism in this symphony. For the entirety of this section, the harp constantly performs a D-flat major arpeggio, the violas stay strictly within D-flat pentatonic, the cellos stay mainly on tonic and dominant and the basses are performing the March theme along with the horns. The only instrument that fluctuates is the violin. For the most part, the violins stay with the violas in D-flat pentatonic but there are moments when the violins echo the violas a third above which, instead of eliminating the pentatonic line, makes the violins seem as though they are adding a bit of accompaniment or an almost counter-melody to the viola line. If approached with this in mind, then it appears that Dvořák is simply providing a harmonic outline to the violas just as in the cadential pentatonicism of the previous works.

The image displays a musical score for the string section of the Coda in the second movement of Dvořák's Symphony No. 3 in E-flat major. The score is arranged in five staves: Arpa (Harp), Violin I and II, Viola, Violoncello (Vlc.), and Contrabasso (Cb.). The key signature is E-flat major (three flats), and the time signature is 4/4. The Arpa part features a melodic line with a 'pp' (pianissimo) dynamic marking. The Violin I and II parts, as well as the Viola part, contain several passages of rapid sixteenth-note runs, some of which are highlighted with red boxes to indicate moments of pentatonicism. The Violoncello and Contrabasso parts also feature rapid sixteenth-note passages, with 'pp' markings at the beginning of the section.

Fig. 5, *Symphony No. 3 in E-flat major*, mvmt 2, string section at the coda. The two violin lines and the viola line contain moments of pentatonicism, some are outlined in red

Dvořák's *String Quartet No. 5 in F minor* seems to be the first of Dvořák's more controlled and refined string quartets. The lengths and structure of the movements are much more clear and succinct. Dvořák also seems to have a stronger grasp on the handling of thematic material and

motivic development within a string ensemble. It is perhaps because of these reasons that Dvořák decides to include a very strong passage of cadential pentatonicism within the first movement. This example is unlike those heard in the symphonies up until this point. All four instruments take part in performing a *tutti* descending pentatonic line. This lasts for only a few measures but appears more than once during the piece as a means of separating thematic sections or suddenly deflating tension at the cadence. It could be argued that this is one of the most obvious uses of cadential pentatonicism by Dvořák thus far in his repertoire as it appears so strongly and in all of the instruments of the ensemble. Dvořák continues this string of powerful cadential pentatonicism into the third movement of this work where it acts as closing material for the movement and only appears once. This cadential pentatonicism is also very similar to the cadential pentatonicism of the first movement in that it is performed at *forte* with most instruments involved and only lasts a few measures. While the fourth movement does not contain any pentatonicism worth mentioning, Dvořák's *Romance for Violin in F minor* was actually meant to be a reworking of the second movement of this string quartet and provides excellent examples. The main themes of this piece are not strictly pentatonic but the solo violin tends to close these themes with long flowing lines of cadential pentatonicism that work extremely well in this environment.



Fig. 6, *Romance for Violin in F minor*, cadential pentatonicism as a descending line at the end of the first theme outlined in red.



Fig. 7, *Romance for Violin in F major*, cadential pentatonicism in triplets appearing between moments of developmental ideas outlined in red.

Symphony No. 4 in D minor

Dvořák *Symphony No. 4 in D minor* is another work that is fairly well known within the composer's repertoire and continues the trend of adding more and more of Dvořák's distinctive style and sound into his younger works. Unfortunately for the sake of pentatonicism, this work is nearly devoid of any elements of pentatonicism. This is most probably due to the dark and stormy nature of each movement that does not allow for strong instances of cadential pentatonicism. There are a couple of instances in the fourth movement that consist of pentatonic descending lines leading into a cadence but they are obscured by a few appearances of scale degree four within the lines themselves. This causes a descending line that has a coloration of pentatonicism but is not strictly pentatonic in nature like previous examples. It could possibly be argued that these are forms of elaborated cadential pentatonicism but these specialized for of pentatonicism are typically much more obvious (as shall be discussed later).

Much like his *Fourth Symphony*, Dvořák's *String Quartet No. 6 in A minor* contains very little evidence of pentatonicism within the entirety of the work. There are many relaxing, descending cadential passages that could easily serve as examples of cadential pentatonicism, but for whatever reason Dvořák decides not to make use of the technique. Dvořák purposefully incorporates scale degree four enthusiastically throughout these falling figures. Perhaps Dvořák

felt as if he had made use of the technique entirely too much throughout his music up until this point. Whatever the case, Dvořák nonetheless sets up perfect moments of cadential pentatonicism only to trick the audience by turning the passages wholly diatonic at the very last moment. Instances of this kind of “cadential diatonicism” can be found all throughout this quartet within each movement, definitively showing the Dvořák was avoiding any sort of cadential pentatonicism.

Dvořák’s *String Quartet No. 7 in A minor* brings pentatonicism slowly back into his music. While there are not any explicitly great examples of cadential pentatonicism within this work, there are several passages where Dvořák very strongly hints at a pentatonic line. These passages tend to be very short in length, only about one or two measures long, but they are wholly pentatonic. These short examples do not necessarily come at times of cadential closure but instead seem to close musical ideas. It is because of this reason and the relatively short length of these examples that they should not be considered on the same level of cadential pentatonicism as his *Romance* or perhaps even an earlier symphony. What is most important about this work is that it shows that Dvořák could not bring himself to stay away from pentatonicism for long. A large part of what makes Dvořák unique is his use of pentatonicism which, for the past few works seemed to have waned away. Now the composer begins to revisit these techniques in such a way that is more familiar even if it is not quite perfect yet.

One last mention before moving past this period of absentee pentatonicism is the composer’s *Serenade for Strings in E major*. This work serves as an excellent culmination of Dvořák skills in writing for strings at this point in his life. Unfortunately, and much like his string ensemble works up until this point, the *Serenade* lacks much evidence of pentatonicism. While the piece

itself brings together much of the string ensemble techniques that Dvořák had been working on up until this point, it is lacking in any sort of cadential pentatonicism. Unlike his *Fourth Symphony* or one of his more recent string quartets, the piece does not contain any strong sense of falling cadential passages that are strictly diatonic in nature. Instead, Dvořák seems to forgo this technique of easing tension into a cadence completely for this work. Moving past this work, it becomes clear that much of the music written around the time of his *Fourth Symphony* seems to be an experiment not in new techniques so much as in alterations of existing techniques. Although Dvořák seemed to have left behind cadential pentatonicism for a time, (and it should be stressed that this is a very short time, 1874-75) there is already evidence growing that the composer will pick the technique back up before long. Of course, this is most definitely the case even as soon as his very next symphony.

Symphony No. 5 in F Major

Dvořák's *Symphony No. 5 in F major* continues the trend of showing Dvořák's excellent techniques of composition. The main themes of the first movement are very march-like. They are marked by very short quick motives made up of mostly tonic-triad pitches. The themes of this movement are excellent examples of the need for caution when approaching whether or not a theme qualifies as pentatonic. The themes have little or no use of scale degrees four or seven but they also contain almost no evidence of pitches other than scale degrees one, three, and five. Because of the relatively confined nature of these themes it is not accurate to call these themes of this first movement strictly pentatonic. That said, there are a few moments of strong cadential pentatonicism. Each appearance of this technique happens near the end of a full statement of the

primary theme that causes these cadential lines to appear both in the exposition and at the end of the coda.

The image shows a musical score for the first movement of Dvořák's Symphony No. 5 in F major. The tempo is marked 'Poco meno mosso' and the dynamics are 'pp' (pianissimo). The score includes staves for Violins I and II, Viola, Violoncello (Vlc.), and Contrabass (Cb.). A red box highlights a descending cadential pentatonic line in the 1st violins and cellos, which is outlined in red above. The line is marked 'pp' and 'arco'. The tempo changes to 'ritard.' (ritardando) at the end of the movement.

Fig. 8, *Symphony No. 5 in F major*, mvmt 1, descending cadential pentatonicism within 1st violins and cellos approaching the close of the movement outlined in red above.

Dvořák leaves any elements of pentatonicism out of the second and third movements. This is probably due to the already relaxed feeling of both movements meaning that there would be no need to include any cadential pentatonicism to ease the tension. The fourth movement takes a much darker turn that lasts almost entirely throughout. Because of this, Dvořák is able to incorporate excellent moments of cadential pentatonicism within the movement. The longest of that appears right before the coda of the piece. This instance of cadential pentatonicism is perhaps both the longest and most exposed moment so far in the composer's repertoire. If there was any doubt as to the authenticity of pentatonic usage in Dvořák's music before his time spent in America, that doubt has now been cleared up magnificently with the way in which Dvořák handles it in this movement.



Fig. 9, *Symphony No. 5 in F major*, mvmt 4, flowing pentatonic lines within the string section mostly without any accompaniment from the winds outlined in red.

Stabat Mater and Forward, Into Czech Works

Continuing forward finds the topic of cadential pentatonicism at the door of a turning point in Dvořák's life, the creation of his first middle period work *Stabat Mater*. Before diving too deeply into that work, it is important to make note of the distinctive lack of pentatonicism within Dvořák's *String Quartet No. 8 in E major*. While there is nothing especially different about this chamber ensemble piece compared to others at the time, the fact that this is another string quartet that lacks any semblance of pentatonicism is interesting enough. Dvořák does not seem to have any problem with incorporating the two forms of pentatonicism within large-scale works like his symphonies and smaller works like his *Romance*, but he does seem to change his mind frequently on whether or not to use this technique with his chamber works. As if to back up the claim regarding pentatonicism in large-scale works, Dvořák seems to have no problem incorporating pentatonic elements within his monumental religious work *Stabat Mater*.



Fig. 10, *Stabat Mater Dolorosa*, cadential pentatonicism within the woodwinds both extending a line created by the vocalists moments before and in the process of being continued by strings in the following measures outlined in red above.

The bulk of *Stabat Mater* is an excellent example of Dvořák's ability to write music for religious settings while keeping his own unique and distinctive sound. In the opening movement of the work Dvořák introduces a perfect example of falling cadential pentatonicism shortly after a very long and painful buildup to the climax of this movement. This same figure appears at the very end of this movement directly leading into the close of this section. Instead of incorporating different versions of this descending figure throughout *Stabat Mater* Dvořák instead chooses to use this technique only when the primary theme of the piece reappears throughout the following movements. This happens infrequently through the middle of the work and suddenly resurges at the end when the main theme reappears. With the primary theme being so strong and so powerfully dark, it stands to reason that Dvořák would need something equally powerful to lower the tension and turn the music towards a brighter light. That is why moments like those described in figure 10 are both quite lengthy and very obviously pentatonic. As the works within Dvořák's middle period come into light it might be important to examine some trends within this period that would explain why certain works are examined.

Dvořák's middle period includes works following his *Stabat Mater* and ending with his last pieces written before travelling to America, his "Nature, Life, and Love" trilogy of concert overtures. Important works spanning this time includes his string quartets 9-11, symphonies 6-8, and the wealth of Czech and Slavonic works. As this period tends to reflect Dvořák's progression deeper into "Czechness" it is important to recognize those works that would benefit from an analysis of cadential pentatonicism and those that are strictly Dvořák's impression of Czech sounds and therefore would likely not include this specialized technique. For this reason, the *Czech Suite* and *Slavonic Rhapsodies* will be the only two Czech and Slavonic works to be examined outside of a bit of reference to his *Slavonic Dances*. The *Czech Suite* because of its large-scale orchestration and the fact that it comes right at the start of Dvořák's Czech and Slavonic trend and the *Slavonic Rhapsodies* mainly due to their importance within the composer's repertoire. Other works that are not typical chamber or symphonic works to be included are Dvořák's *Serenade for Wind Instruments*, his *Violin Concerto*, and his trilogy of concert overtures.

Dvořák's *String Quartet No. 9 in D minor* features some of the strongest examples of cadential pentatonicism found within a chamber work thus far encountered in Dvořák's repertoire. The first movement of this work is rife with examples of cadential pentatonicism that appear both

very strongly in places and also with much clarity. One such example falls shortly after the close of the primary theme.



Fig. 11, *String Quartet No. 9 in D minor*, first mvmt, falling cadential pentatonicism within the first violins leading into the last cadence of the exposition outlined in red.

Not only is this example of cadential pentatonicism so powerful within this movement, it also falls within a very important moment, the final cadence of the exposition. For this reason, Dvořák brings this figure back multiple times before the end of the movement. It appears in the development and again within the recapitulation both in the middle of the recapitulation and at the very end of the movement. While Dvořák chooses not to use this technique again in any of the rest of the movements the sheer certainty of this figure within the first movement more than makes up for its absence within the subsequent movements. Thus far in Dvořák's chamber pieces such a brazen example of cadential pentatonicism has not appeared, and especially without such repetition. As time moves forwards into Dvořák's middle period, this kind of example will become much more commonplace, as well the trend that exists within this piece itself. Dvořák is becoming much more confident in his use of cadential pentatonicism. For this reason, he only uses it in pieces or movements where he knows that he can get the needed and full effect of the technique. Gone are the days of wavering back and forth between frequent and infrequent usage of the

technique or powerful and weak versions. From now on, Dvořák will be much more clear and consistent with use of the technique.

Dvořák's *Serenade for Wind Instruments in D minor* is an excellent follow-up to his ninth string quartet. The serenade handles pentatonicism in much the same way as the string quartet. This means that the piece is mostly devoid of any pentatonicism at all, except for the third movement, the *Romance*. The entire movement is covered with evidence of pentatonicism. Even the themes of the work contain powerful evidence of this technique. There is only one problem, Dvořák must know how easy it would be to make this a truly pentatonic work, one to a degree unlike any that have been encountered before within the composer's repertoire, and because of this Dvořák chooses almost at every opportunity to guide the audience's feelings back towards diatonicism. Long periods of strongly pentatonic lines will be shattered by the inclusion of an occasional fourth scale degree or ended abruptly with a leading tone into the tonic. As if to make matters worse, the composer moves the piece into minor for much of the middle of the movement. While there are strong candidates of cadential pentatonicism throughout the entire movement of this work, there is never a purely pentatonic moment. The situation that this movement has created is unlike the uncertainty of past works or movements which include pseudo-pentatonic themes or figures. Dvořák must obviously know that he is skirting the line between strict pentatonicism and slightly off-color diatonicism due to the frequency with which he does this. Perhaps the reason for this avoidance of a strictly pentatonic movement is the same reason why the composer waits until travelling to America to write strictly pentatonic movements within works.

composer to make the closing section of a work more powerful and more extensive while also putting his own style and sound within it.



Fig. 13, *Slavonic Rhapsody in A-flat major*, ascending cadential pentatonicism within the strings outlined in red.

String Quartet No. 10 in E-flat Major and More Czech Works

Dvořák's *String Quartet No. 10 in E-flat major* is not only a fairly popular work within the composer's repertoire but also contains both instances of very clear pentatonic lines as well as of pentatonic lines that have been either altered or elaborated upon. The first example of the pentatonic elaboration comes at the end of the first movement. While most of the cadenza at the end of this movement is strictly diatonic or chromatic, the high point of the cadenza sees a release of energy into the final cadence of the piece through what should be a typical example of cadential pentatonicism. Instead, Dvořák takes this line and adds a single instance of scale degree seven in order to upset the line. Because both scale degrees one and six are heavily emphasized around this single pitch, this should be considered a coloristic addition to what is an example of falling cadential pentatonicism.

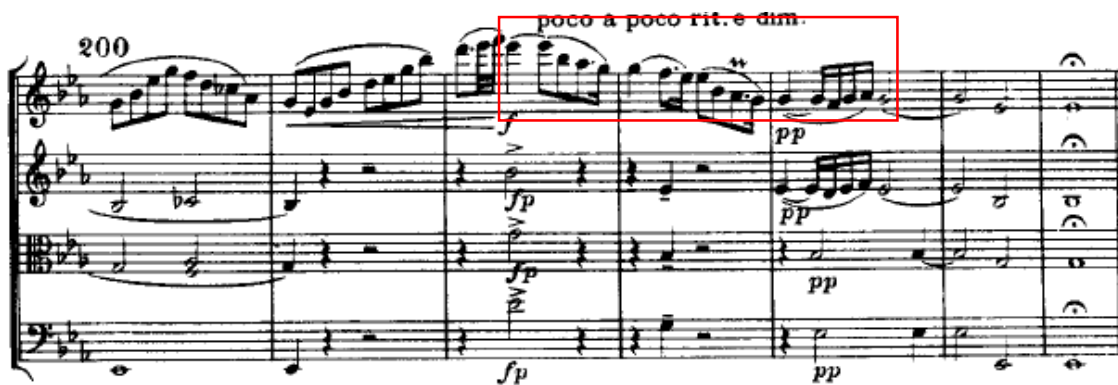


Fig. 14, *String Quartet No. 10 in E-flat major*, mvmt. 1, falling elaboration of cadential pentatonicism here in bars 3-5 outlined in red.

The third movement of this piece includes almost a full section of highly pentatonic material. This section only lasts for a small part of this movement but brings with it a theme that could be considered pentatonic and many instances of cadential pentatonicism that appear sometimes as just a beat worth of material and other times as entire measures worth. This movement also includes lines of elaborated pentatonicism throughout its entirety. These elaborated lines are typically started with scale degree four and do not include scale degree six so the question of whether or not they are authentic examples of cadential pentatonicism is still in effect.



Fig. 15, *String Quartet No. 10 in E-flat major*, mvmt 3, cadential pentatonicism within the second violin extended outlined in red



Fig. 16, *String Quartet No. 10 in E-flat major*, mvmt 3, extension of cadential pentatonicism of fig. 15 now in first violin with some elaboration outlined in red

The first two movements of Dvořák's *Czech Suite* contain little to no pentatonic elements within them. In fact, with the exception of a couple places, this work in general is much like Dvořák's *Slavonic Dances* or *Slavonic Rhapsodies* in that the stylistic focus of this work is much more in line with Czech folk music than with any of the composer's subtler techniques. That said, the third movement of this piece easily straddles the line between pentatonic and diatonic throughout the entire length of the movement. There are only a few occasions within this movement where Dvořák stays strictly pentatonic with his melody line. This happens during one of the themes of the movement and also during the closing section of the movement. All other instances of falling cadential passages are either elaborations of cadential pentatonicism or are strictly diatonic. This pentatonic passage is not without its own specialties though. As Dvořák unfolds the line he gradually adds in diatonic scale degrees until the last measure of the line where the composer has suddenly transformed this pentatonic line into something strictly diatonic in nature. The way in which Dvořák moves the tonality of this movement back and forth from diatonic to pentatonic more than makes up for the rest of the *Czech Suite* being largely without pentatonicism in general.



Fig. 17, *Czech Suite*, mvmt. 3 *Sousedska*, falling pentatonic line in the strings slowly giving way to diatonicism started in the cello and moving into the violins, outlined in red.

Not surprisingly, Dvořák's only violin concerto contains multiple examples of cadential pentatonicism. It is of no coincidence that most of the examples encountered thus far have fallen within the string section, specifically the violins. Perhaps because of this, it felt only natural for the composer to write in many small passages of cadential pentatonicism within the solo violin part. This happens even though the work itself is in minor that does not allow many chances for cadential pentatonicism to come into the light. It should be mentioned as well that most of the examples of cadential pentatonicism within this work really only appear within solo passages in the violin. Rarely is the soloist accompanied by any other instruments while performing these passages except near the ends of movements.



Fig. 18, *Violin Concerto in A minor*, mvmt 1, falling cadential pentatonicism leading into a return of the orchestra outlined in red



Fig. 19. *Violin Concerto in A minor*, mvmt 1, cadential pentatonicism within the flutes and oboes at the end of the movement outlined in red.

The second movement of this concerto is much less pentatonic than the first movement. Still, the composer does not worry about adding a very strong passage of cadential pentatonicism to bring about the final cadence of the work. Just as in the first movement, this pentatonicism is only found within the solo violin but Dvořák has no problem extending the falling pentatonic line throughout over 8 measures of music.



Fig. 20, *Violin Concerto in A minor*, mvmt 2, cadential pentatonicism within the solo violin lasting for much of the closing section of this movement outlined in red.

Much in the same manner as the second movement, Dvořák does not have the solo violin perform any pentatonic passages until the end of the piece where, suddenly, the soloist is performing a descending line of cadential pentatonicism for an extended period of time.



Fig. 21, *Violin Concerto in A minor*, mvmt 3, cadential pentatonicism both rising and falling at the close of the movement outlined in red.

Symphony No. 6 in D Major

The second movement of Dvořák's *Symphony No. 6 in D major*, to someone who may be accustomed to the composer's treatment of pentatonicism, is filled with moments of unreleased tension. The primary theme of this movement with its heavily triadic structure fulfilled all the necessary requirements for a pentatonic theme within its first few notes. The problem with this theme lies within Dvořák's treatment of the consequent phrase. Dvořák has a chance to end the theme with just as much pentatonic emphasis as the beginning at multiple points but at every instance the composer decides to turn the theme into a much more diatonic form. It isn't until the very last few measures of the movement that Dvořák finally fulfills our expectations and gives us the pentatonic form of the primary theme but at a strongly cadential moment. While it only exists for a brief moment in time, this small bit of cadential pentatonicism embodies a larger role within the motivic and harmonic structure of the movement.

The image shows a page of a musical score for the second movement of Dvořák's Symphony No. 6 in D major. The score is for woodwinds, specifically Flute I & II (Fl. I, II), Oboe I & II (Ob. I, II), Clarinet I & II (Cl. I, II), and Bassoon I & II (Fag. I, II). The music is in D major and 3/4 time. The score is marked with dynamics such as *ff* (fortissimo), *fp* (fortissimo piano), and *pp* (pianissimo). A red rectangular box highlights a specific passage in the woodwinds, starting around measure 200 and ending around measure 205. This passage features a cadential pentatonic theme, which is an alternate version of the primary theme material. The theme is characterized by its heavily triadic structure and pentatonic emphasis.

Fig. 22, *Symphony No. 6 in D major*, mvmt 2, cadential pentatonicism also working as an alternate version of primary theme material in the woodwinds at the end of the work outlined in red.

The fourth movement of this work sees Dvořák employing a very similar technique to the one above. The main theme of this movement is also very heavily pentatonic in that it only uses scale degrees one, two, three, and five. The only problem with this theme is that it is missing scale

degree six and when, during consequent phrases or elaborations, it does include this scale degree, four and seven are often soon to follow. In this movement though, Dvořák takes this technique a step further and directly uses the primary motives of the main theme as cadential descending patterns at almost all cadences within the work. Each time this appears it is only rarely that Dvořák includes scale degree six and if he does it is only for a fleeting moment bringing into question whether or not these cadence points can really be called instances of cadential pentatonicism.



Fig. 23, *Symphony No. 6 in D major*, mvmt. 4, questionable moments of cadential pentatonicism in the woodwinds, this occurs frequently throughout the movement outlined in red.

Due to the high levels of pentatonicism within Dvořák's *String Quartet No. 11 in C major*, one could almost be fooled into thinking that this work was also a part of his American works. The first movement contains many examples of cadential pentatonicism at the end of large sections. These examples are typically several measures in length and will infrequently feature moments of elaboration in one of the string parts. The heavy usage of pentatonicism during these points is only bested in quality and quantity by Dvořák's twelfth string quartet. Even the way in which the composer uses syncopation with the pentatonicism rivals that of his twelfth string quartet. The similarities between this first movement and the first movement of the later quartet are very striking. With all of this in consideration, it should be mentioned that it will still be another eight years before the composer even begins to think about the "New World" and even longer until he actually arrives there. If there was ever proof that Dvořák knew of pentatonic structures before coming to America, the cadential pentatonicism in this movement and later the fourth movement would be more than sufficient.



Fig. 24, *String Quartet No. 11 in C major*, mvmt 1, one of many moments of cadential pentatonicism within this movement. There is some elaboration within the accompanimental voices as well outlined in red.

While Dvořák strongly hints at pentatonicism within his second and third movements, he does not bring back a true rendition of cadential pentatonicism until the last movement of the work. Here, both at the end of the exposition and the end of the piece, Dvořák includes a fairly lengthy violin cadenza. For most of the cadenza Dvořák has the violin play within strictly diatonic lines but near the ends of each one he adds in a few measures of pentatonicism that are then slightly elaborated into the cadence. In these moments Dvořák is being very meticulous with where and when he wishes to present the special qualities of ascending pentatonicism. He waits until after a long moment of chromatic tension before introducing this rising pentatonic line that builds towards the cadence but also is able to diffuse some of the harsh dissonance created by the earlier chromaticism. This shows that Dvořák is well aware of the qualities that the different forms of cadential pentatonicism holds. Had he decided to use a falling pentatonic line, the tension would then have diffused too quickly before the fermata and would have meant a quicker end to the movement or section as a whole. Because he instead chooses to use the ascending version,

Dvořák is able to simultaneously diffuse tension while creating different layers of newer energy allowing for a cadence that is not quite relieved of stress. This in turn leads to either the development or coda of the movement that bring their own qualities to the music.



Fig. 25, *String Quartet No. 11 in C major*, mvmt. 4, cadenza ascending pentatonicism for a brief moment within the first violin outlined in red.

Symphony No. 7 in D Minor

Dvořák's *Symphony No. 7 in D minor* is another work that contains some excellent examples of the composer's cadential pentatonicism. While the first movement struggles from a battle between its very dark primary theme and its lilting secondary theme, the second movement is situated in a much more relaxed environment. Much of the middle section and its bookends are adorned with examples of cadential pentatonicism. This most often comes in the form of some contrapuntal figures between one or more instruments and the violins. Later this turns into a much more structured form of cadential pentatonicism that seems to perpetuate itself that causes a large section of the movement to seem as if the music is not going anywhere. The reasons for this are uncertain and could most definitely be speculated upon. For the purposes of this research, the static

motion within the movement allows Dvořák to create multiple excellent examples of cadential pentatonicism.

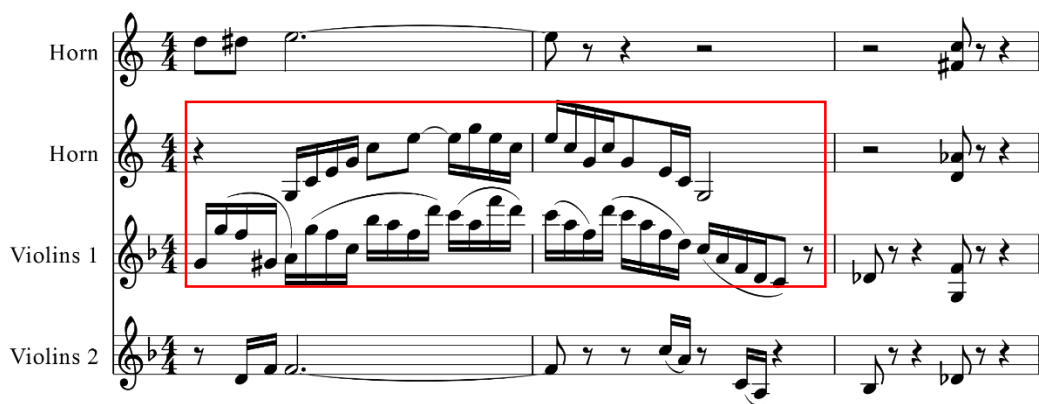


Fig. 26, *Symphony No. 7 in D minor*, mvmt. 2, cadential pentatonicism at work between the first violins and horns outlined in red.

Dvořák continues this trend of explicit pentatonicism into the third movement of this symphony but limits the frequency of it quite considerably. Dvořák uses cadential pentatonicism only in a few places but it serves a dual purpose in these instances. Each time a descending pentatonic figure appears in this movement it is normally at the end of a cadential point and will often flow into a short modulatory passage, the purpose for which is to transition both themes and sections of the piece into new places.



Fig. 27, *Symphony No. 7 in D minor*, mvmt. 3, a short moment of cadential pentatonicism in the woodwinds before modulating, outlined in red.

Before moving into the last few large-scale works in Dvořák's repertoire it will help to discuss the composer's treatment of cadential pentatonicism within his most popular small work, his *Slavonic Dances*. It has already been established that the Czech treatment of pentatonicism is not really pentatonic so much as it is modal. It has also been mentioned that Dvořák alters this Czech modality fairly often into his own form of pentatonicism that is more akin to a free treatment of diatonic and pentatonic structures. For his *Slavonic Dances* (as well as many of his other strictly "Czech" works) Dvořák forgoes pentatonicism in favor of tonal structures more akin to Czech and Eastern European folk styles. It is for this reason that there is not much in the way of cadential pentatonicism within these Czech works. There are moments of thematic pentatonicism within some of the works (most often works for more than just solo piano or piano four-hands) but Dvořák tends to favor the more typical harmonic and melodic structures of his fellow countrymen. With this in mind, there are a few moments within his *Slavonic Dances* that could be considered examples of cadential pentatonicism. While not all are explicitly obvious like those

encountered in his symphonic works, the basic structure seems to be pentatonic in nature with extensive elaboration.



Fig. 30, *Slavonic Dances*, II, cadential pseudo-pentatonicism within the primary piano part. There is a distinctive lack of scale degree six within this line outlined in red



Fig. 31, *Slavonic Dances*, XI, elaborated cadential pentatonicism within the secondary piano part outlined in red

Symphony No. 8 in G Major.

With only a few works left before Dvořák becomes overwhelmed by American folk styles some interesting events will happen within the composer's pentatonic techniques. The first special mention should be made in regards to Dvořák's *Symphony No. 8 in G major*. This work, not unlike his *Ninth Symphony*, has been the subject of much examination and study. As it regards to pentatonic techniques this symphony contains some very highly pentatonic themes in the first movement alone and the symphony as a whole contains more than its fair share of pentatonic themes. Although it should be pointed out that the symphony does not have nearly as much in the

way of cadential pentatonicism. The first movement of the symphony contains a few moments of cadential pentatonicism that appear in a way that is reminiscent of his *First Symphony* and first few works in general. The pentatonic line in these moments is muddled by the powerful and full textures appearing around it. Because of this, the pentatonic line has to struggle to be heard underneath everything else.



Fig. 32, *Symphony No. 8 in G major*, cadential pentatonicism within the first and second violins.

With the exception of this moment and one other later moment in the first movement, there is not much evidence of cadential pentatonicism within both of initial movements. The second movement also contains what could be considered a pentatonic theme but has barely any moments of true cadential pentatonicism. In fact, the composer does not truly revisit this technique at all within the rest of the symphony. This is not something that one would expect given the amount of cadential pentatonicism used in previous symphonies. Whatever the reason for Dvořák's dismissal of cadential pentatonicism within this work, he more than makes up for it within the first piece of his concert overture trilogy *Nature, Life, and Love*.

The first work of this concert trilogy is his *In Nature's Realm*, a work that has a very pastoral and almost wandering feeling to it. Due to this inherent peacefulness or relaxation (or perhaps because of these) Dvořák makes full and frequent use of pentatonicism throughout the entirety of the work. The primary theme is strictly pentatonic and he rarely moves away from pentatonicism as thematic material. There are many moments of elaborated cadential pentatonicism within this work but it is perhaps more important to dwell on the moments of true cadential pentatonicism that appear infrequently but with much emphasis. These occur both at the opening and ending to the piece though it should be noted that the last few minutes of the work contain basically an extension of the opening instance of cadential pentatonicism playing over a long stretch of time.



Fig. 33, *In Nature's Realm*, cadential pentatonicism at the opening of the work in the first violins and extended by clarinets outlined in red.

Perhaps feeling that his initial entry in the trilogy contained enough pentatonicism (or perhaps fulfilled a role not necessary for the second entry), Dvořák does not include any evidence of true cadential pentatonicism within the entire second work, *Concert Overture*. This is something

worth mentioning in regards to both this series of concert overtures and his later tone poems that will be the last works to examine. Perhaps due to the programmatic nature of these works, Dvořák chooses to use pentatonicism only to fulfill certain tasks within a work. These tasks are very much akin to the topics discussed earlier by scholars such as Day-O'Connell in regards to how pentatonicism was treated. For instance, within this concert trilogy, most evidence of pentatonicism occurs either in the very pastoral *Nature* work or in references to *Nature* within his *Concert Overture* (representing *Life*) and his *Othello Overture* (representing *Love*). Because of this, if the composer is purposefully avoiding any evocation of nature, the pastoral, or almost supernatural relaxation (as will be seen in his tone poems), he will explicitly avoid any indication of pentatonicism. Because of this, there is now a better explanation as to why Dvořák does not hint at pentatonicism within his *Concert Overture* and *Othello*. Neither work is meant to give the feeling of nature or the pastoral so Dvořák does not need or want to include pentatonicism in either. It should be mentioned that there are moments of pentatonicism in each of the two works but these are only in moments where the pentatonic themes of *In Nature's Realm* are brought back for programmatic purposes. In his *Concert Overture*, Dvořák shows that elements of nature and life are often inseparable, hence why the themes appear more than once within the work. In *Othello*, Dvořák brings back the pentatonic theme at the beginning but twists it into something dark and much more diatonic perhaps showing how love can twist what is natural.

Symphony No. 9 in E Minor and American Works

At this point in his life, Dvořák had finally travelled across the Atlantic to stay in America for a time. While there, he learned much about American folk music styles branching from Native and African-American cultures. It is also while here that Dvořák made use of his pentatonic techniques

to their fullest potential. Many scholars have already discussed Dvořák's treatment of pentatonicism within his *Ninth Symphony*, *Twelfth String Quartet*, *Cello Concerto*, and other smaller works. As mentioned previously, these scholars heavily imply that it was through the influence of these musical subcultures that Dvořák was introduced to the so-called wonders of the pentatonic scale. Of course, this implication should now be dismissed as merely a half-truth. It is true that Dvořák's music became much more pentatonic while staying in America, but as we have seen, Dvořák had no problem at all with incorporating pentatonic elements in works written before his travels. That is not to say that the American subcultures did not affect his outlook on pentatonicism. Through his own words and his various compositional techniques, it is clear that his time in America caused him to look at pentatonicism in a new light. Dvořák is now writing pentatonic themes in most every movement of every work for the next two to three years. Perhaps for this reason, it would be relevant to examine some instances of cadential pentatonicism within these works. Examples will be drawn primarily from the composer's *Symphony No. 9 in E minor* and his *String Quartet No. 12 in F major*.

The first movement up of his *Ninth Symphony* until the second movement contains many moments of elaborated cadential pentatonicism but surprisingly nothing truly pentatonic alone. This could be for many reasons not the least of which being the extensive use of pentatonicism within other moments of the symphony. The first example of cadential pentatonicism within the second movement appears multiple times but is not the typical descending line that is expected. Instead, Dvořák uses the primary motif of this movement as a foundation for the cadential pentatonicism that leads into the secondary theme.



Fig. 34, *Symphony No. 9 in E minor*, mvmt. 2, cadential pentatonicism in the solo horn.

A page of musical score for Symphony No. 9, movement 2. It features multiple staves for woodwinds (flutes, oboes, bassoons, clarinets) and the first violin. A red rectangular box highlights a passage where the woodwinds play a cadential pentatonic figure, which is then taken up by the first violin. The passage is marked with dynamics like 'pp' and 'dim.'.

Fig. 35, *Symphony No. 9 in E minor*, mvmt. 2, cadential pentatonicism within woodwinds then extended into the first violin outlined in red.

A page of musical score for Symphony No. 9, movement 4. It shows the first violin part and other instruments. A red rectangular box highlights a passage in the first violin where a cadential pentatonic figure is played and then elaborated. The passage includes markings for 'Solo.', 'Tutti.', and 'dim.'.

Fig. 36, *Symphony No. 9 in E minor*, mvmt. 4, cadential pentatonicism in the first violins that is eventually elaborated, outlined in red.

Though the above examples are just some of the moments of cadential pentatonicism within the piece (elaborated or otherwise), Dvořák surprisingly does not give any sort of special attention to this technique throughout the work. While he heavily relies on pentatonicism for his

construction of themes, his use of cadential pentatonicism is barely more than that seen within past symphonies. In fact, it could be argued that some symphonies hold more or perhaps truer examples of cadential pentatonicism but while there could be any kind of reason for Dvořák's treatment of this technique within the *Ninth Symphony* the fact still remains that cadential pentatonicism exists both before and during his American period.

Dvořák's *String Quartet No. 12 in F major* contains an even heavier use of thematic pentatonicism than his *Ninth Symphony*. Nearly every theme in each movement is either completely pentatonic or implies pentatonicism very heavily. The first movement alone could be called an exercise in pentatonic composition with how much the composer relies on the technique. Even with all of this heavy pentatonicism in consideration, Dvořák somehow chooses to take advantage of cadential pentatonicism very sparingly. There are only a few moments within the first and third movements that can be considered to have strong cadential pentatonicism. All other moments of cadential pentatonicism are elaborations. There are a lot of these moments within the work as a whole but it is strange that Dvořák does not use true cadential pentatonicism more within the scope of this piece. The most obvious possibility for this dismissal of cadential pentatonicism could simply be that the composer does not need this technique in order to diffuse tension as the nature of his thematic pentatonicism does not create enough energy needed for cadential pentatonicism. Whatever the case, it is still important to recognize that cadential pentatonicism is still at work within this piece on a level not unlike previous string quartets.



Fig. 37, *String Quartet No. 12 in F major*, mvmt. 1, cadential pentatonicism in the first violin outlined

in red



Fig. 38, *String Quartet in F major*, mvmt. 3, short cadential pentatonicism used also used as transition in first violin outlined in red.

Moving away from Dvořák's American works it should become clear that the composer has had no problem making use of cadential pentatonicism to varying degrees both before and during his exposure to heavy pentatonicism within Native and African-American folk styles. In

examining the composer's last few works, specifically his last string quartets and some of his tone poems, hopefully it will also become clear that Dvořák had no problem with continuing his use of cadential pentatonicism after returning home. It should also be noticed that the cadential pentatonicism encountered in these works, while being used for different purposes in the case of his tone poems, appears in just the same ways as it had appeared in previous works. That is to say, Dvořák's exposure to American folk styles did not affect his treatment of cadential pentatonicism. There is no sudden surge in either true cadential pentatonicism or pentatonicism elaborated. There is only the continued existence of cadential pentatonicism used occasionally within works for a specific purpose. As always, that purpose is either to release tension in a unique way within his more absolute works or to serve programmatic expectations. If an argument could be made for differences between cadential pentatonicism after his American works and that of works written before, it would be made in regards to his treatment of this technique within his tone poems. The purpose for cadential pentatonicism in his tone poems does not seem to be so much for releasing tension as it is for more programmatic aspects. This includes creating moments where the audience is to think of nature, pastoral, or peace. In truth, this is not unlike Dvořák's treatment of cadential pentatonicism within his concert overture trilogy except perhaps on a more detailed level. It should be mentioned though that while the purpose of cadential pentatonicism will seemed to have changed, the way that Dvořák creates and uses the technique does not change from absolute to programmatic works but perhaps it is best to examine his last two string quartets before moving on to the tone poems in question.

Dvořák's *String Quartet No. 13 in G major* could be best described as a combination of American and Czech elements into one work. The piece is heavily pentatonic at times and at other

times seems to be another excellent work of Czech and Dvořák style. Regardless of the blending of these styles within this work, the evidence of cadential pentatonicism is still apparent and appears often. While the strongest evidence seems to come from the second movement of this work, there are instances of cadential pentatonicism all throughout the piece.

The image displays a musical score for String Quartet No. 13 in G major, movement 1. The top system is marked "Meno mosso, maestoso." and the bottom system is marked "in tempo". The first violin part in the bottom system is highlighted with a red box, showing a cadential pentatonicism. The score is in G major (one sharp) and 4/4 time. The bottom system also includes markings for "marcato" and "E. E. Q113".

Fig. 39, *String Quartet No. 13 in G major*, mvmt. 1, cadential pentatonicism with some slight elaboration in the first violin outlined in red.



Fig. 40, *String Quartet No. 13 in G major*, mvmt. 3, cadential pentatonicism primarily in the cello, other parts contain elaboration, outlined in red.

Within the scope of Dvořák's string quartets, his *String Quartet No. 14 in A-flat Major* falls relatively flat in terms of cadential pentatonicism perhaps rounding out the trend of the technique through his string ensemble works. While the piece does have moments where a descending line could possibly be considered pentatonic, for the most part, cadence points are strictly and obviously diatonic. There are a few moments in the later movements where cadential pentatonicism is allowed to come out within the music. This occurs mainly within the last movement and, as a whole, this piece contains little in the way of cadential pentatonicism though it is still more than his earliest string quartets. Instead of considering this piece as an example of a work written after his time in America that does not contain pentatonicism, it should be considered as a piece containing a lower amount of cadential pentatonicism than should be expected at this point in Dvořák's life. The fourth movement of this string quartet does not hold the same pentatonic strength as the twelfth and thirteenth string quartets but it does have

moments of cadential pentatonicism. These moments are often passed around through the instruments and only occur a few times.



Fig. 41, *String Quartet No. 14 in A-flat Major*, cadential pentatonicism initialized by the first violins and extended by the second violin outlined in red.

The Tone Poems of Dvořák

As mentioned earlier the tone poems of Dvořák shed some new light on how pentatonicism is meant to be used. For the composer, pentatonicism in these works is supposed to fulfill the very typical pastoral or peaceful topics much like how most other Romantic composers treated it. Because of this, works like *The Water Goblin* and *The Noon Witch* do not feature much pentatonicism at all. Along the same lines, *The Wild Dove* contains pentatonicism in quite a few places but in this instance it is of the thematic variety. The only moments where cadential pentatonicism could potentially be at work are moments that are either insignificantly small or where the pentatonicism is too elaborated for a good argument to be made in favor of it. A very similar situation unfolds within *A Hero's Song* where there are plenty of implied passages of cadential pentatonicism. The maiden's theme in *The Water Goblin* is the closest that any work comes to thematic pentatonicism and even that is quite a bit of a stretch. Of course, these works are not meant to be very peaceful and are certainly not supposed to represent nature (both works deal heavily with supernatural topics). Of course, Dvořák manages to find a role for pentatonicism within *The Golden Spinning-Wheel*.

While the program for this work does deal with supernatural topics, it is perhaps because of the happy-ending that he is able to incorporate pentatonicism without the technique feeling out of place. In fact, *The Golden Spinning-Wheel* is absolutely littered with pentatonic elements throughout the entire work both in the form of some pentatonic themes and as cadential pentatonicism.



Fig. 42, *The Golden Spinning-Wheel*, a moment of ascending cadential pentatonicism within the clarinets and then flutes, outlined in red

This image shows a musical score for 'The Golden Spinning Wheel'. It features multiple staves for various instruments: Fl. I., Fl. II., Ob., Cor. ingl., Cl., and Violins (Vl.). Red boxes highlight passages in the Fl. I., Fl. II., and Vl. parts, showing ascending pentatonic scales. The Fl. I. and Fl. II. parts are marked 'p legato' and 'dim.'. The Vl. part is marked 'p legato' and 'pp'.

Fig. 43, *The Golden Spinning Wheel*, cadential pentatonicism started by the oboes and flutes that is then taken over by the violins outlined in red.

Final Remarks

For the purposes of this paper, the tone poems are the last works within Dvořák's repertoire that will be examined. It is important to note that some chamber works that contain elements of cadential pentatonicism were left out. These include chamber works such as his pieces for piano and strings. Also, Dvořák's operas were not included in this examination. In both cases, it is not because of a lack of pentatonic evidence in these works so much as the fact that (with the

exception of some operas) these works did not seem as relevant to the discussion as Dvořák's string quartets and symphonies. Perhaps the biggest reason for this is that cadential pentatonicism in these pieces is often found only at specific points. While one piano trio might contain excellent examples of cadential pentatonicism, others will contain little to no such examples and there does not appear to be a trend in the use of the technique over time in these pieces. It is a slightly different situation with Dvořák's operas. Often if he includes cadential pentatonicism it will serve a similar programmatic function as those found in his tone poems and concert overtures. That is, it will only appear under certain conditions such as when the composer wishes to evoke feelings of the pastoral and of peacefulness. That is not to say that there are no examples of cadential pentatonicism within his operas, only that they seem to be within their own special category. Perhaps further investigation into pentatonicism within Dvořák's operas would reap new fruits in regards to this topic but the author was unable to find any new evidence. Of course, it should be mentioned that while the works examined in this section constitute only a part of the composer's repertoire, the corpus study on thematic pentatonicism in the following section leaves no stone unturned and examines all of the composers works in some shape or form.

Now, it is important to understand why a corpus study was used in conjunction with this more formal analysis. Because thematic structure is a much more salient feature than the cadential lines discussed in this section, it becomes possible to define and examine thematic pentatonicism with more care and certainty. Thus it becomes much more important that as many themes as possible are examined in order to make a strong case for thematic pentatonicism within works written before travelling to America. If there is a lack of thematic data, then this will cause problems in proving the case for thematic pentatonicism. Such problems could include issues

where the pentatonicism of a given theme is debatable or where one theme in a given work is only pentatonic in definition and not pentatonic in the way of aural perception. It should be understood that the point to be made in regards to thematic pentatonicism is slightly different than that made for cadential pentatonicism. It is not so important that we merely see evidence of thematic pentatonicism in works predating 1891 as it is that we see a significant amount of evidence, either in regards to popularity of works examined or in the entire set of works as a whole. It is for this reason that there must be as much thematic data as possible. Of course, if one considers the number of possible themes in all of Dvořák's works it does not come as a surprise that examining and comparing each and every theme for pentatonicism becomes a nearly impossible feat (if not at least time-consuming). With the aid of computational methods, this task becomes much more accessible. Through way of encoding these themes within the kern music format, it becomes possible to use various computational tools that will help find a solution to this problem.

Chapter 3, Corpus Study. Examining Thematic Pentatonicism in the works of Antonin Dvořák

Introduction and Hypothesis

Of all the compositional techniques used by Czech composer Antonin Dvořák throughout his many pieces of music, the technique of pentatonicism is one of the most well-known (next to Czech folk styles). For Dvořák, the use of pentatonicism means the use of the pentatonic scale most often in a melodic context. His idea of pentatonicism is not normally found from a harmonic standpoint in that the composer has no qualms in using diatonic scale degrees in the accompaniment alongside strictly pentatonic melody lines. Dvořák's melodic pentatonicism can be categorized into two distinct types, cadential and thematic. Cadential pentatonicism has been discussed thoroughly in the section preceding this study and is best described as melodic lines that approach a cadence in either an ascending or descending fashion and only contain notes of the pentatonic scale (i.e. scale degrees 1, 2, 3, 5, and 6) occasionally with some sort of elaboration that typically results in the addition of one diatonic scale degree to add color or blur the tonal foundation of the line. Thematic pentatonicism is much simpler to understand in that it can be simply defined as thematic structures within a piece or movement that only contain notes of the pentatonic scale.

Much of the research surrounding Dvořák's use of the pentatonic scale is in regards to those works that he composed while staying in, or travelling to, the United States and back (1891-95). In fact, as mentioned before in a previous section of this paper, most musicologists agree that the pentatonic nature of the works written during these years is due to the musical phenomena that the composer was exposed while there. Dvořák's encounter with Native and African-American folk music from both his job as a composition professor and through his experience with American

musicians is supposedly what inspired the composer to make heavy use of thematic pentatonicism. After all, it is hard to argue that his *Ninth Symphony*, *String Quartet No. 12*, and *Te Deum* do not contain strongly pentatonic themes, and these are just a few examples of his American works. It could be argued that the idea of Dvořák's use of pentatonicism while in America partly originated from the interviews that the composer took part in while there³⁷. As mentioned before, these interviews include talks where Dvořák specifically mentions how the music of Native Americans mystified him with its distinctive lack of the subdominant and leading tone. Whether or not the composer was telling the truth or possibly exaggerating in these interviews is not exactly the issue, but there is strong evidence that suggests the composer was well aware of the technique of thematic pentatonicism long before being exposed to American folk music.

It has already been shown that the composer not only used cadential pentatonicism long before coming to America and it would stand to reason that he must have used other pentatonic techniques as well in at least some of these same works. While it would be great to examine each work individually for evidence of thematic pentatonicism, this task would take an exceeding long amount of time. Because of this, it is perhaps best to employ some computational methods in order to help facilitate this research and it is for this reason that a computational approach has been taken in order to determine whether or not the composer had used pentatonic themes to a significant degree before coming to the United States. In order carry out this approach some points need to be clarified.

³⁷ Clapham, *Antonín Dvořák Musician and Craftsman*. 87

In order to help make the definition of the second form of pentatonicism in Dvořák's works more clear, it is probably best to determine a definition of thematic pentatonicism that will work for this study. It is not difficult to decide on an overarching definition of thematic pentatonicism within the composer's repertoire. The problems occur when examining themes that seem to straddle the line between pentatonic and non-pentatonic. For this purpose, the first lines of the definition should be that the theme must include more than three different pitches in order to be considered pentatonic. This is because there is too much discrepancy in determining the structure of a very simple theme, like that of a fanfare or quick dance. Also, it goes without saying that the harmonic outline of the theme need to not be accountable for whether or not the theme is pentatonic. The complete absence of scale degrees four and seven should not be held so strictly. Dvořák may not always stay strictly pentatonic throughout an entire theme. Ornamentation that would cause the performer to play scale degrees four or seven should also be ignored as these fixtures are not truly a part of the theme but instead give coloration to it. If these aspects of the theme are ignored, then the definition of thematic pentatonicism should be limited a bit more. In order for a theme to be pentatonic over three-quarters (90%) of the pitches present should be only scale degrees one, two, three, five, and six. This allows the examination to help determine pentatonic themes out of lines that may be adorned with ornamentation of coloristic pitches (such as the case in Dvořák's concertos or during more "solo-like" themes). It should also be noted that, as with cadential pentatonicism, the accompaniment following along with thematic pentatonicism is allowed to include instances of any scale degree, chromatic or otherwise. This is because Dvořák has no qualms with writing traditional harmonies underneath the instruments making use of thematic pentatonicism. So with this concept of thematic pentatonicism in mind, it is important to

now address the argument on whether or not thematic pentatonicism (and therefore Dvořák's pentatonic style in general) is a product of exoticism or if it is born of internal factors.

It should be mentioned immediately that thematic pentatonicism (along with cadential pentatonicism) is present from the onset of Dvořák's compositional career. Examples of thematic pentatonicism can be found from the very first few works within the composer's repertoire and exists throughout his career (though in following a slightly different trend).



Fig. 1 from *Symphony No. 1 in C minor* (1865), mvmt. 4, primary theme

This symphony was written in 1865, when the composer was only 24 years old, and already the evidence of thematic pentatonicism can be seen. The accompaniment below is only meant to be a reduction of the harmonies underneath this melody. Just as in his *Ninth Symphony*, Dvořák has no problem including non-pentatonic notes within his accompaniment, but he does explicitly avoid them within the confines of the thematic material.

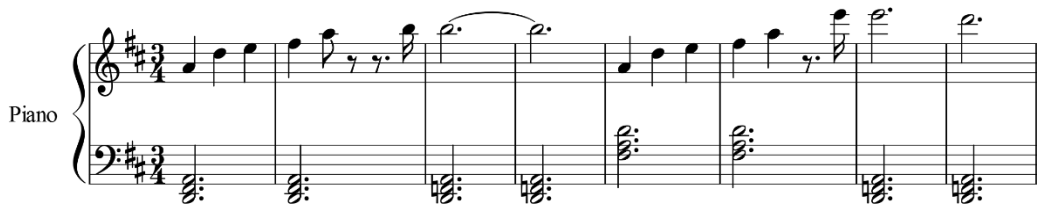


Fig. 44a, *Impromptu* (1883), thematic pentatonicism from the secondary theme



Fig. 44b, *Piano Quartet No. 1 in D Major* (1875), mvmt. 1, thematic pentatonicism within the primary theme

As can be seen in both figures above, Dvořák's use of thematic pentatonicism is fairly straightforward even in works dating from before the 1890's. The fairly redundant harmonic accompaniment that can be found in the above examples is actually not uncommon. If Dvořák really wants to stress the pentatonic nature of a theme, he will purposefully avoid harmonic progressions unless he needs to develop more interest unrelated to the theme itself.

Now that there is a better understanding of the composer's usage of thematic pentatonicism, the structure of this study will be examined more closely.

Methods

Firstly, it is important to make a distinction on what exactly constitutes a musical theme. For this, any music phrase lasting at least four bars that appeared more than twice in a given work or movement was considered a theme. This phrase needed to appear multiples times in its complete form and ideally within the primary or secondary key zone (mostly tonic and dominant), but if the phrase was longer than four bars and appeared in keys outside of its initial key then that phrase was considered a theme. Also, for pieces with very light orchestration such as works for piano and voice, and works that were fairly short in length such as works lasting less than about four minutes, these were typically only considered to have one primary theme. While it was most definitely a possibility that a work fitting these criteria could have more than one potential themes, often the secondary theme only lasted for a small section of the piece and was never revisited again. These distinctions led to an average of two themes per movement or work, listed as a primary (PT) and secondary (ST) theme. For longer works or works in general that contained more themes these subsequent themes were labelled in numerical order starting from tertiary themes (TT) and onwards (4T, 5T, etc.). Each theme was then encoded into the kern style of notation so the Humdrum toolkit could be used to examine them.³⁸ The kern notation allowed for the themes to be examined with an accompaniment spine that consisted only of the harmonic structure or progression of the theme. Because of this and as mentioned before, it is important to note that pentatonic themes would still be considered pentatonic even if the harmonic structure underneath the theme contained diatonic scale degrees. Once the themes had been converted into kern format and were therefore able to be examined using the Humdrum toolkit it became

³⁸ David Huron, *Unix Tools For Musical Research: The Humdrum Toolkit; Reference Manual* (California: Center for Computer Assisted Research in the Humanities, 1994).

important to discern an operationalized definition of pentatonicism that could be better handled through empirical means.

For the purposes of this study a theme was considered pentatonic if it met these certain requirements. Firstly, the theme needed to contain only the scale degrees included in the pentatonic scale. In order to help make the case for a pentatonic theme less vague, themes that contained less than 10% of instances of scale degrees four and seven (as well as other chromatic scale degrees) were considered to be potentially pentatonic. Also, simple themes that did not have more than three distinctive pitches were considered to be pentatonic only if the accompaniment did not further emphasize scale degrees four and seven. In other words, if the accompanimental harmony emphasized the dominant (and therefore the leading tone) than the theme would be considered potentially diatonic. This emphasis most often was in the form of multiple instances of the dominant in one measure or multiple instances of the dominant-seventh chord within the entire scope of the theme. Finally, a theme could only be considered pentatonic if it contained at least one instance of scale degrees 1, 2, 3 and 5 each and that those scale degrees constituted a large portion of the theme. This would allow potentially pentatonic themes that did not emphasize the sixth scale degree within the melodic line to be considered though the total count of all five scale degrees within a theme needed to be at least 90%.

Lastly, only the works pre-dating the year 1891 were considered for this study. This is because it is not important for the hypothesis whether or not Dvořák used pentatonic themes after travelling to the United States (he most certainly did), and considering themes written after returning from America would not prove that the composer used thematic pentatonicism before being exposed to American folk music. In order to show the significance of pentatonic themes

before 1891, Dvořák's American works were considered in order to compare the results of pre-1891 with those of the span of 1891-94. In this case, works written after 1894 were still dismissed as it is too easy to argue whether or not those works were truly inspired by American folk styles.

The synthesis of these factors has led to the creation of a very simple and blunt tool for finding pentatonic themes within the scope of Dvořák's repertoire that operates like so: A musical idea, lasting at least four bars, which returns multiple time over the course of an entire piece is considered to be a pentatonic theme if at least 90% of the pitches within the themes constituted scale degrees 1, 2, 3, 5, and 6, and no more than 10% of the pitches constituted scale degrees 4, 7, or chromatic pitches. It should be noted that this is by no means an all-encompassing tool for determining pentatonicism in melodies and that a better tool is currently being constructed that will take into consideration many factors which this smaller tool cannot handle at this time. That said, for the purposes of this study, this tool will work fine but it should be noted that the results that originate from the usage of this tool might differ from that of a more robust and refined tool.

After this tool was developed and used on this dataset, the data was then checked for transition probabilities (the probability of one pitch to move to any other pitch) between pitches in themes dating before 1891 and those dating after 1891. The purpose for this was to check and see what the correlation was between transition probabilities of the same pitches before and during the American trip. In this way, it would become possible to not only see if there was indeed an increase in pitch transitions that would imply usage of the pentatonic scale after travelling to the United States. This pitch transitions that could imply this usage of the scale include such transitions as scale degrees: 5-6, 6-5, 5-3, 3-5, 3-2, 2-3, 2-1, 1-2, 1-6, and 6-1. While not as obvious, transitions of scale degrees of the pentatonic scale that move past a whole-tone was also

examined. The findings of this study do not explicitly prove or disprove the hypotheses below but they might help to bolster the evidence for or against them. Finally, the data for this study can be found below in the results section.

And so, the hypothesis for this study is as follows:

Use of the scale degrees 1, 2, 3, 5, and 6 as the structure of the melody line in a theme occur in a significant amount of works written before the year 1891 compared to those works written during the years 1891-1894.

Procedure

After constructing a table of themes, years, and a binary factor of whether or not the theme was considered pentatonic according to the tool used above, it was then possible to create subsets of this data based on the date of composition. The pieces were first examined through use of a linear regression model, taking into consideration all themes in all years grouped into five year periods, in order to find if there was a gradual change in usage of thematic pentatonicism over time.

Afterwards, it became necessary to take the five-year period subset and examine it without outliers that could possibly be affecting the date. In this case it became necessary to examine the five-year period data without the American years (1890-95) in consideration. Also, to check for consistency, one last study was conducted on a subset of ten year periods. For each of the subsets, another linear regression model was used to examine change in pentatonicism over time.

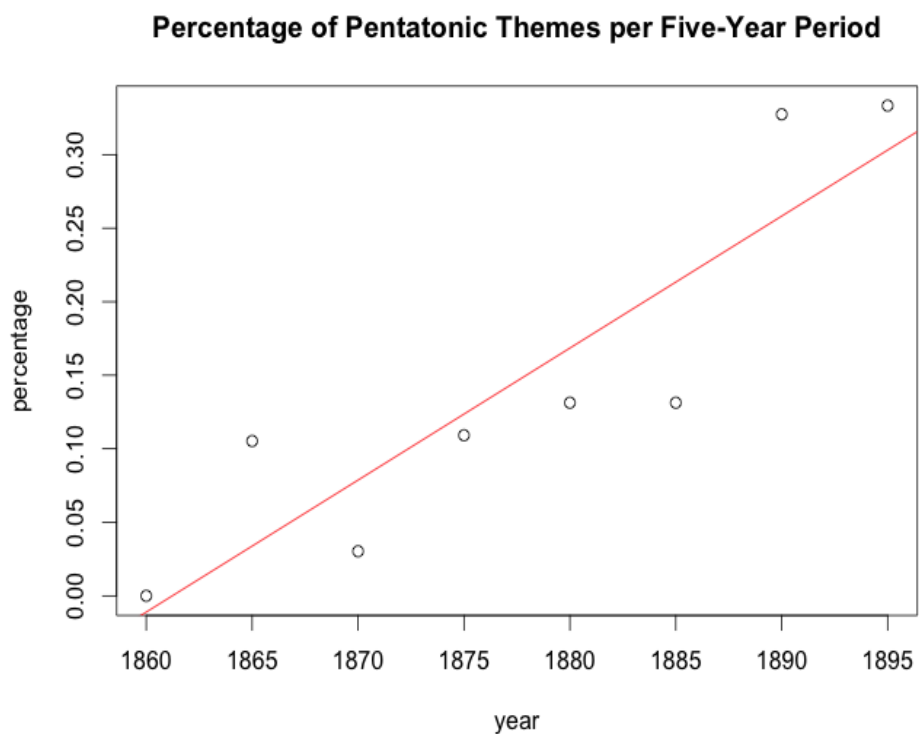
In addition to these linear regression models of correlation, an exploratory study of transition probabilities was conducted. The probability of the composer to follow a certain pitch with any other pitch was determined for the period of works spanning before and during 1890 and those written during the period of 1891-95. These two subsets were then compared against one

another to find differences. While these differences do not prove nor disprove the hypotheses, they do give information that will relate to the findings of the above studies and possibly give some explanation as to what exactly might have changed from 1890 to 1891 within the realm of Dvořák's style.

Results

A thorough examination of the models shows several key findings:

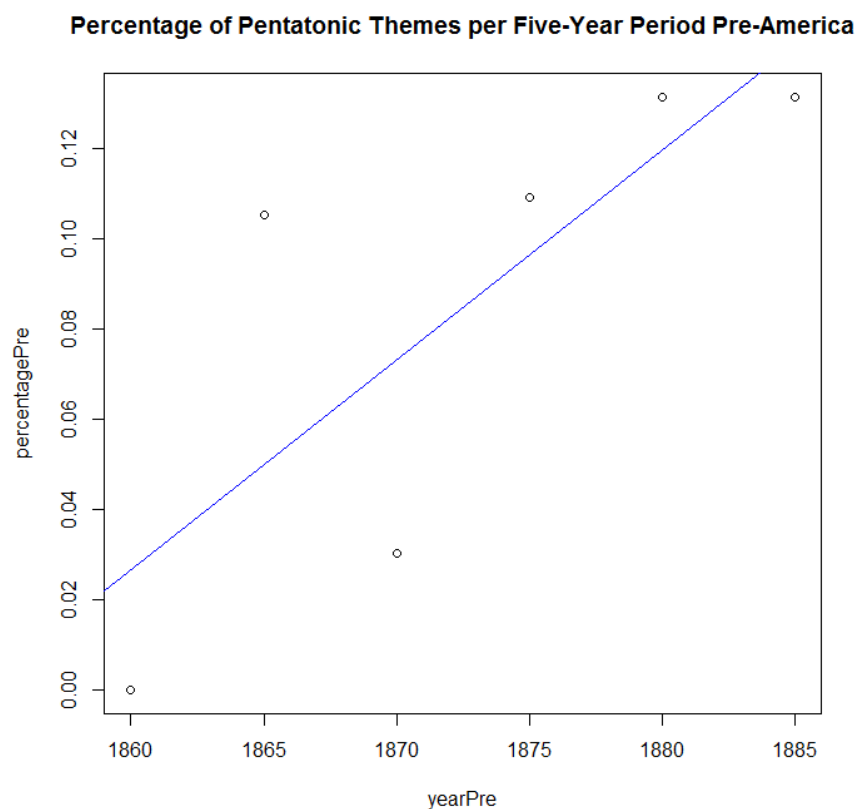
In the first study examining change in usage of pentatonicism over the course of his entire life until after 1895 the results found that there is a significant possibility that Dvořák's use of thematic pentatonicism gradually increase up until 1890 and through the American years as show in graph .



Graph 1. Percentage of Pentatonic Themes per Five-Year Period including themes from his American period

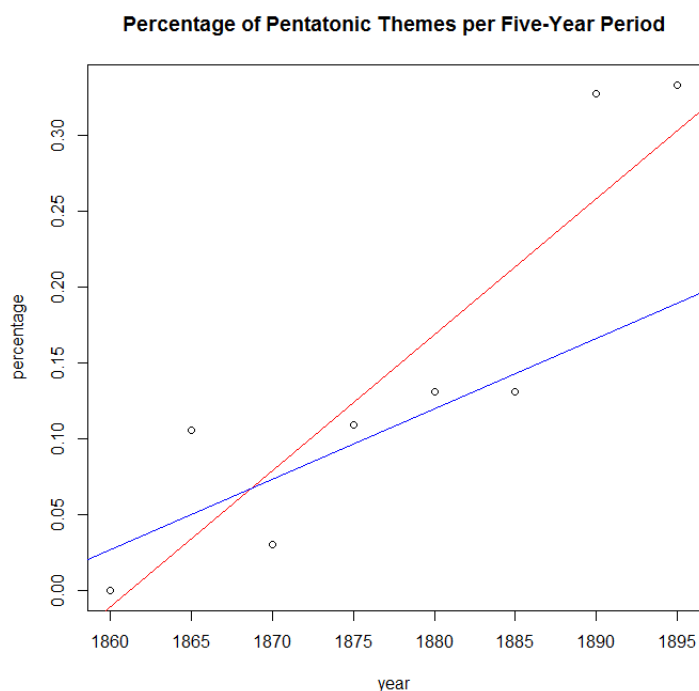
A summary of the regression shown in graph 1 shows that there is a significant growth in pentatonicism over time ($p\text{-value} < .001$, $r^2 = 0.05$).

For the second study, it was necessary to try and account for the large outliers created by the percentage of pentatonic themes that originate from the period of 1890-1895. The results of this study are shown in graph 2 below.



Graph 2. Percentage of pentatononic themes per five-year period before 1890

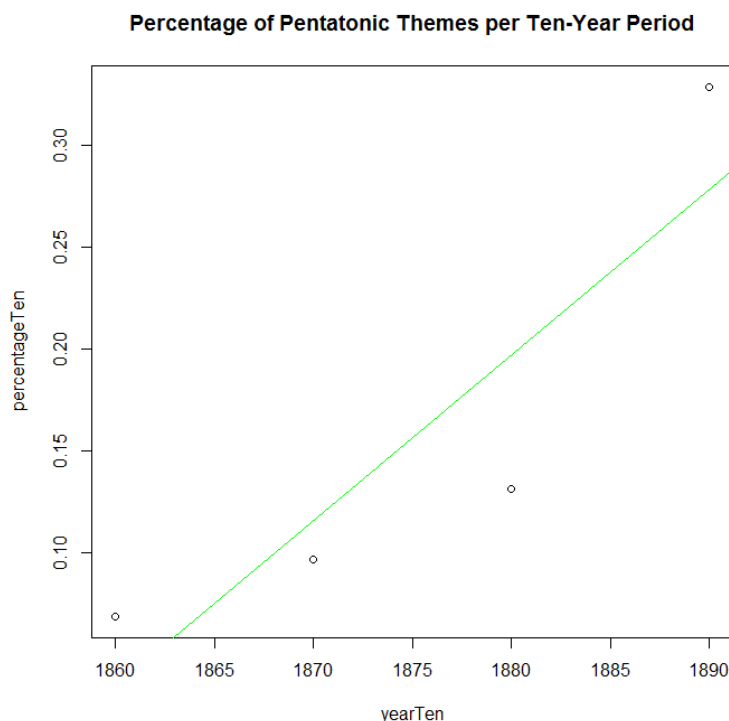
A summary of the regression in graph 2 shows that, while there seems to be a growth in pentatonicism over time from 1860-1890, this growth is not significant (p-value .066, $r^2 = .61$). A better view of the pre-America subset compared to the linear regression of the full dataset can be seen in graph 3 below.



Graph 3. A comparison of the percentage of pentatonic themes from the pre-America subset (blue) and the entire dataset (red)

One glance at graph 3 above shows exactly just how much the outliers from Dvořák's American period affected the outcome of the study. Of course, it is also possible that the reverse opposite outliers might be affecting the data as well. There are very few themes from the period of 1860-1870 and the division into such small subsets of five-year periods might possibly be final regression.

Finally, to account for any discrepancies in the five-year period subsets, the results of the final study of subsets of ten year periods can be found in graph 3 below.



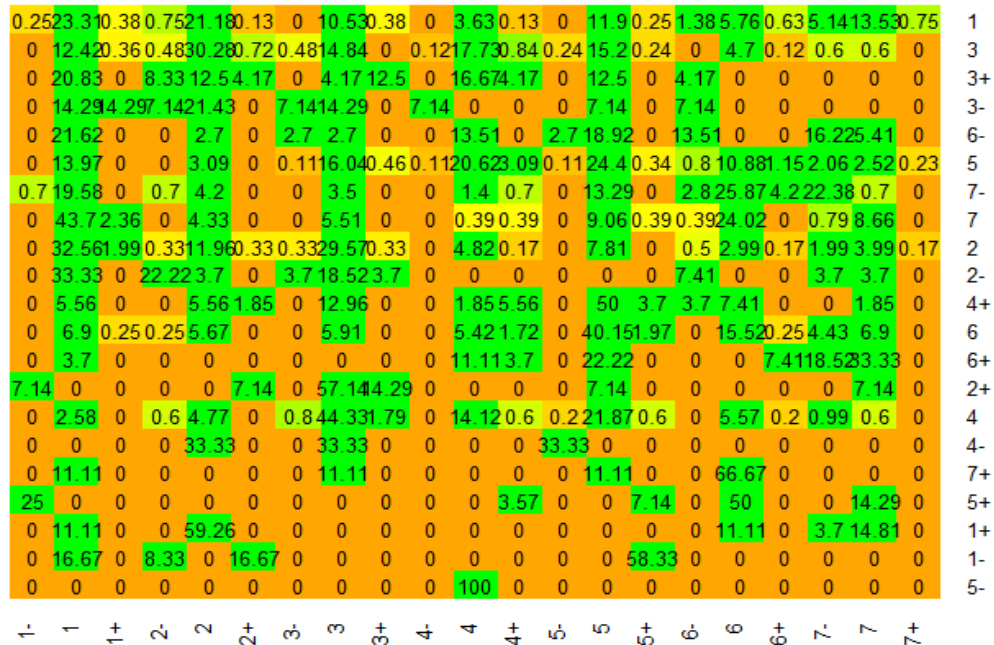
Graph 4. Percentage of Pentatonic Themes per Ten-Year Period

A summary of this subset proves with certainty that the outliers from Dvořák's American period are in fact causing the misunderstanding created by the first study ($p\text{-value} > .10$, $r^2 .79$).

Transition Probabilities Before and After America

A detailed analysis of transition probabilities both before and during the America trip are given in the graphs below. While the information presented in these graphs neither completely confirm nor denies the hypotheses, they do give some better insight into the differences between Dvořák's American style and his pre-American repertoire.

Correlation Pre-America

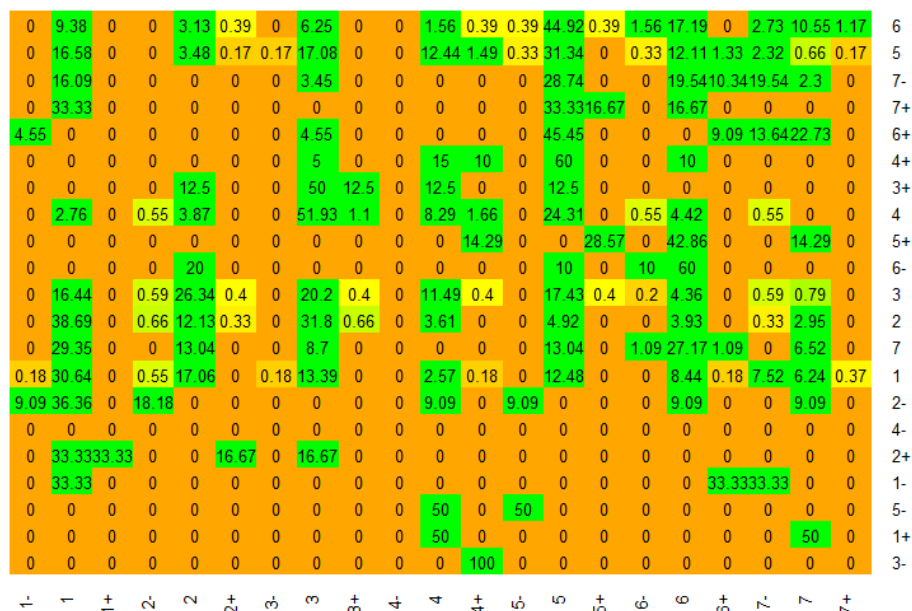


Graph 5. Transition probabilities matrix with green numbers representing common transitions and darker colors representing uncommon or lower probability chances before 1891.

The above graph 5 shows many interesting points of data in regards to Dvořák's handling of various scale degrees. It should be noticed transitions from diatonic pitches are fairly normal for the composer while transitions from leading-tones to diatonic pitches seem not be altogether infrequent. With that said, transitions related to the pentatonic scale do not appear with any real strength. For example, Dvořák is much more likely to follow scale degree 3 with scale degree 4 or 2 than he is with 5. In a similar fashion, the probability for 1-7 is much higher than from 1-6. These findings would suggest that the pentatonic scale might not be as powerful a thematic device for

the composer during this period (but it does not completely dismiss this concept). When compared to graph 6 below the findings become even more interesting.

Correlation America



Graph 6. Transition probabilities matrix with green numbers representing common transitions and darker colors representing uncommon or lower probability chances during the years of 1891-1895

As one would expect from a smaller sample size, there are less highly correlated transition probabilities within this matrix than in the previous one. What is important to note in regards to this graph is the increase in transitions from 1-6 (although it is still lower than 1-7) as a well as the decrease in transitions from 3-5. These findings could possibly imply that Dvořák really did alter his compositional style during his American years, but that this change in style is only slight. For the

most part, the transitions shown in graph 6 relate closely to those found in graph 5. If anything, the most striking difference between the graphs is not related to changes in diatonic transitions so much as the strong changes in chromatic and diatonic-to-chromatic transitions. With the exception of chromatic tones around scale degrees 6 and 7, most chromatic transitions are gone completely in this second dataset. Of course, one could easily explain the instance on chromatic scale degrees 6 and 7 as simply a continuation of alterations to the minor mode frequently encountered in traditional Western music. A discussion of all of these findings is presented below with a more detailed discussion of how the findings of this entire corpus study relate to this thesis following in chapter 4.

Post-hoc Discussion

While there is a significant change in pentatonicism over time in the themes of Dvořák, that significance is most definitely being affected by the outliers created in the five-year period of 1890-1895, his American period (as shown in graph 3). Because of both the effect that these outliers have on the outcome of study one as well as the lack of significance without considering this outlier in study two, it is possible that, while Dvořák does indeed make use of pentatonic themes before his American years, the external factors of exoticism and “otherness” caused by this trip did have an obvious effect on his pentatonic style.

In regards to the exploratory study of transition probabilities some important possibilities are of note. Firstly, regarding the high correlation of the diatonic scale degrees this is probably due not only to the obvious frequency of usage throughout Dvořák’s repertoire but also to the larger concepts of tonal structure as a whole. In the case of transitions from scale degree 1 to any other pitch, in both periods, Dvořák was more likely to move from 1 to another diatonic pitch than any

other pitch (with a transition of 1-7 appearing 13.53% of the time in pre-American works and 6.24% of the time in American works). Also regarding transition probabilities of scale degree 1, in both periods Dvořák was more likely to move from 1-b7 (5.14% and 7.52%) than 1-4 (3.63% and 2.57%). While this might assume some possibility of the increased usage of the pentatonic scale, the transition probabilities of 1-7 are much more common the pre-American works (13.53%) than in the American works (6.24%). Along the same lines, the transition probabilities of 1-6 follow a similar trajectory where Dvořák uses this transition less in his pre-American works than in his American works (5.76% and 8.44%). All other diatonic scale degrees follow a similar trend of movements from diatonic-to-diatonic were much more common than diatonic-to-chromatic except in two cases. One strange phenomenon of this data shows that movement from diatonic-to-b7 happened either more so or in a close quantity to diatonic-to-4. This was true in all cases by a very close margin except in 5-b7/4 and 3-b7/4 where the percentages seemed more like something one would expect from a tonal work. In keeping with Beckerman's idea of Czech tonality, the instances where diatonic-to-b7 did not appear more frequently than diatonic-to-4 often included motion from diatonic-to-#4 in larger amounts than any other diatonic transitions. This occurred most often in 3-#4 and 5-#4. Finally, due possibly to the high correlations between diatonic-to-diatonic transitions between both periods, there was no noticeable increase in pentatonic transitions from pre-America to American works. With that said, there was a marked increase in frequency of diatonic-to-diatonic transitions from pre-America to American works with an average of 2% increase in these transitions. Finally, there was also a marked increase in transitions from 6-1 (6.1% to 9.3%) and a marked decrease in transitions from 7-1 (43.7% to 29.35%) in the American works as well as an increase in 7-6 (24.02% to 27.17%) and from 6-5 (40.15% to 44.92%). The increases in percentages between all of these transitions hint at the

possibility that Dvořák was in some way affected by his trip to America but the author would mention again that this affect was not as strong an affect as others would argue. Discussion of the ramifications of these findings and how they relate to this thesis continue in more detail in the last chapter.

Chapter 4. Conclusion and Final Thoughts

Summary

The musical style of Dvořák has often been interpreted as a conglomeration of Czech folk style, traditional Western Romantic style, and a type of pentatonic style founded in American folk elements. The structure of this last aspect of Dvořák's style should now be a little clearer. Although American folk music acted as an external factor that played a role in the development of his pentatonic technique, the technique itself was most definitely evident in works dating long before the early 1890's. It is possible that Dvořák's pentatonic style as a whole was both constant in his life and also went through changes within more specific aspects of the style (or, simply, on lower levels). This is very much in keeping with many of the tenants of style change posited by Leonard Meyer.

It is the author's opinion that, if Meyer were to analysis the change in pentatonic style over the course of Dvořák's life, he would come to some very similar conclusions. Yes, Dvořák was no doubt affected by the external factors related to his travels to the United States, but it should be noted that some sorts of internal factors enabled the composer to make frequent use of the scale long before this monumental event in his life. Whether through personal taste or through an embellishment of Czech modality, Dvořák was able to make use of the pentatonic scale in such a way as to place internal constraints on his approach to composition, an idea directly related to Meyer's own ideas of internal factors. It could be argued that this internal process within Dvořák's life would serve as an excellent example for the definition of internal factors that Meyer presents within his book. Meyer's example of Haydn's change in temperament over time could easily be combined with the evidence of pentatonic constraints created by Dvořák on his own compositions.

Both examples are very similar to one another with only small differences. While, according to Meyer, Haydn's temperament as it relates to instrumental music placed a constraint on the composer that necessitated frequent change in his instrumental style. Whether this be through the addition of new instruments or the change in formal structure (such as the use of monothematic sonata form), these constraints are not unlike those at work within Dvořák's style. Dvořák needed to extricate feelings of relaxation from his music or feelings of "Czechness" in his music not because of any external event, but strictly because of his own internal constraints. In so doing, he created his own style of pentatonicism that should be readily acknowledged and appreciated today not as an outgrowth of his American period, but as a constant and strong aspect of the composer's full approach to compositional style. It is not surprising that a composer would be affected by external factors that would cause him to alter the approach to his compositional process, but it is important to keep in mind that, at least for Dvořák, this pentatonic style has always been a major facet in his style. Even if one were to entertain the thought that thematic pentatonicism may not play a large role within the repertoire of the composer, the technique of cadential pentatonicism cannot be ignored. And, if we are to consider the role that pentatonicism plays within the composer's repertoire in general, there are possibilities of further research into where that pentatonicism came from. This conclusion will examine some of the possible research concepts that could be used or studied in relation to these possible avenues of further investigation into Dvořák's style.

Possibilities of Cadential and Thematic Pentatonicism

This paper has shown many examples of cadential pentatonicism through some of the composer's most influential and well-known works as well as through some lesser discussed pieces. It also has not examined the many instances of cadential pentatonicism within the wealth of incidental music and opera works. Regarding both thematic pentatonicism and the above corpus study, while the hypothesis of this study cannot be proven viable by the above results, it should be noted that there are a few factors that might be influencing this data. Perhaps the biggest factor in this instance is the lack of a stronger tool for determining pentatonicism. Due to the simple nature of the tool used for this study, it is highly possible that pentatonic themes were either missed or flagged as false positives. Ideally, this study would need to be conducted again with a better tool in hand for determining pentatonicism. Another factor that might be affecting this outcome is that this study is only examining one facet of Dvořák's pentatonic style. His use of cadential pentatonicism is completely ignored in this study (the reasons for which are mainly due to time constraints) and because of this, and the idea that Dvořák seems to use this technique more than his thematic technique, it is still possible that Dvořák's pentatonic technique does indeed grow over time through factors not related the external factors associated with his America trip. Of course, this study only examined thematic pentatonic usage so the inclusion of cadential pentatonicism would then be answering an entirely different question than the one posed by this study. Finally, although the results of this study do not conform completely to the argument made in this thesis, the fact that Dvořák does indeed use pentatonic themes before travelling to America still holds true, even if it is possible that the composer was indeed effected by his trip to America (Although the author would like to make it clear again that this thesis does not suppose that the trip did not have an effect on him, only that it altered an already strong opinion on one part of his

compositional style). Through an examination of Dvořák's pentatonic technique, not only is a new door opened for continued analysis of this technique but it also raises more questions that should be answered. While a more thorough examination of cadential pentatonicism in this works is necessary, it will not hurt to examine an example of cadential pentatonicism that can be found in Dvořák's operas.

The image shows a musical score for strings from Act I of Dvořák's opera *Rusalka*. The score includes staves for Violins I and II, Viola, Violoncello, and Contrabass. The key signature is one flat (B-flat), and the time signature is 4/4. The music is marked *ff* (fortissimo). A red box highlights a specific passage in the Violin I and II staves, which features a cadential pentatonicism. The passage consists of a series of notes that form a pentatonic scale, with the final note being a half note G4. The Viola, Violoncello, and Contrabass staves also show similar rhythmic patterns, but they do not feature the pentatonicism highlighted in the red box.

Fig. 45, *Rusalka*, Act I: Tedy pojd', honem podj (Hexe), a moment of cadential pentatonicism in the strings, outlined in red.

This example is pulled from Act I of *Rusalka*, perhaps the most famous of Dvořák's operas. As can be seen above, although the purpose for the use of this technique may be more in keeping with the similar purposes of cadential pentatonicism found in his tone poems, the form that this cadential pentatonicism takes is very familiar. Along the same lines, although some chamber and incidental works were ignored in this paper, these pieces continue the very stable trend of cadential pentatonicism. In fact, many of the chamber works for piano and strings contain similar amounts of cadential pentatonicism as his other string chamber works. Below is just one example from these works.

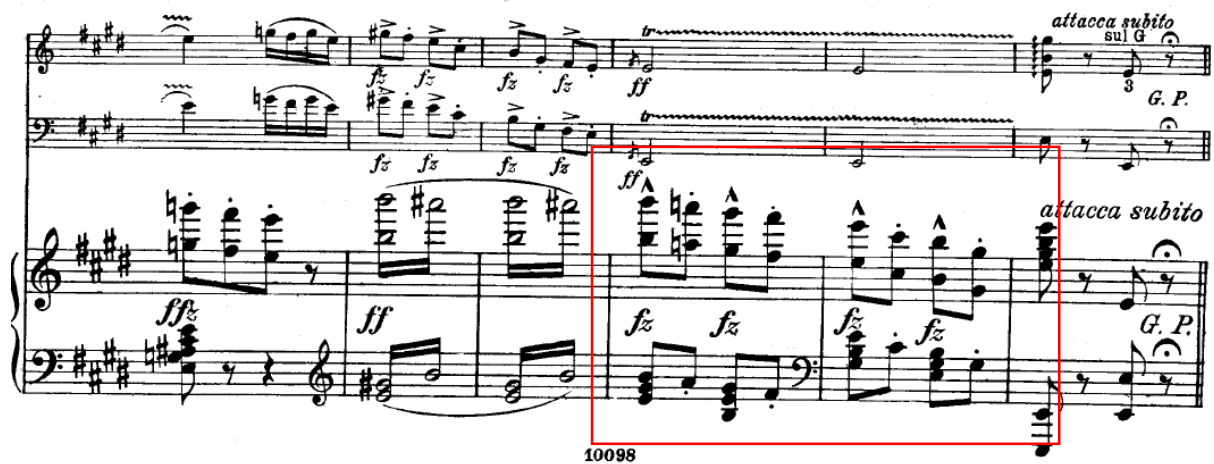


Fig. 46, *Piano Trio No. 4 in E minor*, mvmt. 1, cadential pentatonicism at the end of the movement outlined in red.

The above example is just one of many instances of cadential pentatonicism that can be found not only in this piece nor only in this movement but in many of his chamber works in general. These examples along with the many examples discussed in the earlier chapter show that, at the very least, Dvořák's ability to make use of a single, flowing pentatonic line to help increase the power of a cadential gesture is something worth noting. Although this paper does not claim that this technique is unique to Dvořák, this technique is most definitely something that is not discussed thoroughly in the repertoire of Romantic techniques. If anything, the masterful use of this technique along with the many other artistic facets of the composer's style warrants at least a more thorough examination of the style and prowess of Dvořák. It is the hopes of the author that this paper will foster a newfound appreciation of the stylistic genius of Dvořák and that more study of this composer's style and techniques will be fostered.

This study will hopefully open more doors into examination of the origins of Dvořák's pentatonic style.

Possibilities of Origin and Structure of Dvořák's Pentatonic Style

There are at least two possible approaches to understanding the origin of Dvořák's pentatonic. The first and most obvious would be to trace the lineage between Czech tonality and traditional pentatonicism. While the bulk of information regarding the pentatonic scale and its various forms is limited mainly to its use within Jazz theory, there is a small niche of scholars who have worked desperately to learn about not only the origins and history of this scale but how it relates to individual sounds across the globe. Vietnamese ethnomusicologist Tran Van Khe writes that "Personally, we have come upon the pentatonic scale in all the countries...on the five continents. But it exists especially in folk music while in art music or the more learned tradition, one hears more sophisticated and varied scales in which there are more than five degrees."³⁹ In his work Van Khe does his best to show how the modes used in Japanese, Chinese, Vietnamese, and other East Asian countries are all variations and/or derivations of what Western traditional musicians would call the pentatonic scale. Here, Van Khe uses a very loose definition of pentatonic as, "'5-note scale', 'scale of five tones', 'pentaphone', 'pentaphonic', 'pentaphony'" all of which mean any pentachordal structure that makes up the foundation of a song or instrumental piece.⁴⁰ Van Khe draws many distinctions about what constitutes a folk tune being "pentatonic" through his studies. Many Asian pentatonic scales do not follow the same intervallic pattern as the traditional pentatonic scales.

³⁹ Van Khe, "Is the Pentatonic Universal?" 77

⁴⁰ Ibid. 77-80

The Western traditional pentatonic scale is made up of 5 tones, a 2-note succession of whole steps, a minor third, and a final whole step with a minor third separating the octave. Many Chinese pentatonic scales serve as a kind of modal derivations of the Western pentatonic scale. For example, the Chinese *Gong* scale is equivalent to the Western pentatonic scale such as C-D-E-G-A. The Chinese *Shang* scale, much like its Western modal counterparts, is equivalent to the same Western pentatonic scale if the lowest pitch starts on D and ascends so that the scale becomes D-E-G-A-C-D. Each of the 5 Chinese modes operate in the same way. They are modes based on the *Gong* or the Western pentatonic scale in that each mode begins on a different pitch of the *Gong* and moves through the same pitches in a different ascending order where the original intervals are preserved. Van Khe also makes note of various Asian cultures use of anhemitonic pentatonic scales. These are scales in which there is obvious presence of half-step intervals. Although, there is some debate as to whether or not these anhemitonic scales can truly be considered pentatonic scales.⁴¹ This is due to a key feature of pentatonic scales being the absence of any semitones. It is important to recognize that this key feature is limited strictly to the Western traditional pentatonic scale. Once one travels outside the realm of Austro-Germanic, Western music, the pentatonic scale is allowed to be molded into different forms. One such example of an anhemitonic pentatonic scale is the *Okinawa* scale of Japanese folk music, C-E-F-G-B-C that makes use of not one but two half-step intervals.⁴² This is only one of many examples in Asian music that Van Khe provides. The importance of these variations on the pentatonic scale is that they are exactly what they are, different versions of a *pentatonic* scale. At the end of his paper, Van Khe suggests that, because so many countries use the pentatonic scale (or variations of it) across the globe, the

⁴¹ Ibid. 79

⁴² Van Khe, "Is the Pentatonic Universal?" 81

pentatonic scale must be universal. While one may be inclined to either believe or ignore this claim, at the very least Van Khe provides convincing evidence for the existence of 5-note scales both across the globe as well as their existence within the largest continent on the planet. If one considers how the work of Van Khe relates to the work of various other musicologists in other geographic locations, the argument for global pentatonicism becomes even stronger.

Musicologists in the United Kingdom have made strong arguments and produced great studies for the existence and origins of the pentatonic scale in Scotland, Ireland, and the other parts of Anglo-Saxon Europe.⁴³ Researchers have also found evidence of the pentatonic scale in medieval chant music as well as Jewish and Egyptian music. Of course the early writings of Western theorists would have us believe that the pentatonic scale comes naturally from the major scale and is therefore a central European construct.⁴⁴ From there we cannot forget the relations of Indian music to Middle Eastern music of Turkey and other countries that borrow heavily from their own penta- and heptatonic scales.⁴⁵ In just a relatively short trip we have discovered evidence of the pentatonic scale across Europe and Asia as well as across time itself. If we then travel across the seas to the “New World” evidence of pentatonicism can be found in the music of Native Americans and early African-American spirituals (a trait not only discovered by Dvořák but also by

⁴³ Annie G. Gilchrist, “Note on the Modal System of Gaelic Tunes,” *Journal of the Folk-Song Society* 4, no. 16 (1911): 150–53.

⁴⁴ Jeremy Day-O’Connell, “Debussy, Pentatonicism, and the Tonal Tradition,” *Music Theory Spectrum* 31, no. 2 (2009): 225–61

⁴⁵ Koray Degirmenci, “On the Pursuit of a Nation: The Construction of Folk and Folk Music in the Founding Decades of the Turkish Republic,” *International Review of the Aesthetics and Sociology of Music* 37, no. 1 (2006): 47–65.

a myriad of musicologists both American and otherwise before and since the composer's fated journey across the Atlantic).⁴⁶

This relationship of pentatonicism in folk music across the globe relates directly to the possibility that Czech folk music could make use of a similar structure, and if this is the case, then the argument could be made that Dvořák's pentatonic style is possibly a combination of both pentatonicism as it relates to Czech folk styles and the traditional notion of Western pentatonicism. If we then add to this argument the notion of the pentatonic scale's role in Western music at the time, it becomes clear that there is a possibility that there may be more than one explanation for Dvořák's use of the pentatonic scale within his repertoire. This one statement continues to raise many subsequent questions. If Dvořák's use of the pentatonic scale in his later works was not only a result of American influence but also that of Czech influences, where exactly did this style come from? If American influences were not the sole factor in Dvořák's use of pentatonicism then could he have used the scale, or variations of it, before coming to America? How often then had Dvořák been using the scale? How much had he used the scale? But in order to provide explanations for these questions, it is important to better understand both the role of traditional pentatonicism in the 19th century and Czech folk music's tonal structure.

The first roadblock in possible further examination into the origins of Dvořák's pentatonic style is the notion of pentatonicism as a strongly exotic element. While there is a case for the universality of the pentatonic scale, this does not mean that composers of the 19th century and before were aware of this universality. In fact, musicologists have spent much time and effort in

⁴⁶ J. Marshall Bevil, "Scale in Southern Appalachian Folksong: A Reexamination," *College Music Symposium* 26 (1986): 77–91.

discussing how various Classical *topoi* use pentatonic elements and how pentatonicism was a strong aspect of the Turkish topic.⁴⁷ It must also be considered that pentatonic elements were meant to signify pastoral elements as well. After all, Dvořák was by no means the first composer to use the pentatonic scale. Perhaps by tracing the history and development of the pentatonic scale over the course of strictly Western traditional music, we can then explore the possibility that Czech and Dvořák pentatonicism are related.

Jeremy Day-O'Connell discusses at length about the history of pentatonicism throughout Western music. He begins his discussion of the pentatonic scale by thoroughly unravelling the origins behind the rise of scale degree 6 into the 19th century. Of all seven diatonic scale degrees, this one is perhaps the least used throughout the history of Western music.⁴⁸ In most cases, the scale degree appears as an embellishment of the dominant perhaps as a neighbor tone or, in other cases, as simply a member of triads built on scale degrees 2, 4, and 6 itself. In most cases this 6 will move to scale degree 5 or continue upwards through 7 and into the tonic in some sort of cadential movement such as a progression of IV-V-I in which a certain voice moves 6-7-1. Day-O'Connell suggests that the tendency for scale degree 6 to fall to 5 is exacerbated by the existence of its variant, scale degree b6, that creates even more of a pull towards 5.⁴⁹ Eventually the strength of scale degree 6 increased through the works of the 19th century to the level of cadential material. Day-O'Connell suggests a new form of cadence that seems to act in opposition to typical Western norms, the Plagal-Subdominant cadence 6-8. Of course, it would seem that such a cadence would violate issues of smooth voice-leading and harmonic tendencies but, according to Day-O'Connell,

⁴⁷ Jeremy Day-O'Connell, *Pentatonicism from the Eighteenth Century to Debussy* (New York: University of Rochester Press, 2007). 49

⁴⁸ Ibid. 13-43

⁴⁹ Ibid. 18

this did not stop composers from using this cadence as a means of evoking a very specific type of feeling from the audience.

As time moved forwards, the use of the Plagal-Subdominant cadence gave way to full passages based on the elimination of the half-step scale degrees 4 and 7. With the elimination of these tense tones, composers were able to create very passive and relaxed passages within their works. This technique would help lend itself to the pastoral topic in which uses of open fifths, pentatonic melodies, and simple harmonies all worked together to give the restful countryside feeling associated with this topic. Day-O'Connell also suggests the relationship between pentatonicism and the exotic was becoming more popular into the 19th-century. The elimination of the scale degrees 4 and 7 helped to create the feeling of exoticism within a given work in several ways. This sounded wonderful in topics dealing with Turkish elements even before the 18th-century. Pentatonic elements were also heard and emulated from the sounds of the Orient and of Scotland or the English countryside. If composers wanted to have the audience "visit" a place like China or Scotland all he or she had to do was make use of the pentatonic scale along with a few other accommodations. This association of pentatonicism with exotic and pastoral elements was a huge focus of the 19th-century. Day-O'Connell discusses a plethora of examples that take advantage of these topics within this period. Everything from the works of Berlioz to Schumann and Brahms and even our own Czech composers like Dvořák are shown to include pentatonicism as a means of emulating pastoral or non-Western elements.⁵⁰ But what exactly separates this traditional usage of the pentatonic scale from Czech tonality? Or, how are these two styles possibly related?

⁵⁰ Day-O'Connell, *Pentatonicism from the Eighteenth Century to Debussy*. 47-92

In order to follow up on these questions, it is important to revisit the concepts of “Czechness” posited by Beckerman and discussed at length earlier in this paper. According to Beckerman, one of the largest indicators of Czech folk style having an impression on a composer is the scale structure that holds altered scale degrees 4 and 7. Beckerman argues Czech folk style heavily makes use of the Lydian-Dominant scale, or simply, a major scale with raised 4 and lowered 7. A quick chi-square test of the Essen collection of European folk songs provides some interesting evidence backing this idea of Beckerman.⁵¹ Of the 6,212 folk themes within the Essen collection, 44 themes come from the Czech regions. Within these Czech themes, scale degrees #4 and b7 appear a total of 39 times out of 1,404 possible pitches in all Czech themes. This number accounts for 2.78% of all pitches used within the Czech folk repertoire. Of the non-Czech themes within the Essen collection, out of a possible 298,986 pitches, scale degrees #4 and b7 constitute 4,090, or 1.38% of those pitches. A chi-squared test of these results shows that Czech folk themes contain a significantly higher amount of scale degrees #4 and b7 than non-Czech folk themes (p-value < .01, $r^2 = 18.66$). Of course, this would make sense given that the 2.78% is just over 200% more than the 1.38% of the non-Czech folk themes. Statistics would say then that Beckerman is correct in his idea that a governing factor in Czech tonality is the use of the Lydian-Dominant mode. With further research and examination, it could be found that Dvořák’s pentatonic technique might have originated from elements of Czech tonality and traditional pentatonicism. It would be interesting to examine a possible relationship between the composer’s usage of pentatonicism and his usage of scale degrees #4 and b7. While this test might prove difficult to

⁵¹ Essen Folk Song Collection, “ESAC Data Homepage,” accessed March 15, 2016, <http://www.esac-data.org/>.

carry out, it could open the door to more research into how folk music might affect a composer's musical style if he or she allows it to do so.

Final Remarks

One interesting idea that was stumbled upon during later investigations into the Dvořák theme collection regards prototypicality of his themes. Within a side project done outside of the work of this thesis, it was found through examination of several low-level entropy factors that the most prototypical themes written by Dvořák are as follows:

Table 2. The most prototypical themes within the Dvořák theme data arranged by distance from entropy factor averages⁵²

Theme	Total difference from all entropy averages
Requiem Sanctus, primary theme	.36
Terzetto, movement 4, primary theme	.49
String Quartet No. 13, movement 2, primary theme	.64
Legends, movement 4, primary theme	1.12
Symphony No. 9, movement 3, secondary theme	1.84
Legends, movement 9, primary theme	2.33

While more work needs to be done regarding this topic, it is interesting nonetheless to find that two of his American period works are on this list of themes that are best representative of Dvořák's overall style (*Symphony No. 9* and *String Quartet No. 13*). Just as strange as is this the appearance of multiple themes from the same piece on this list, a fairly unrecognized work of incidental piano music name *Legends*. The importance of this small study is the fact that, statistically, works from Dvořák's American period really are not that different from his standard

⁵² Future work on this topic will make use of Pearson's correlation coefficient within a test of Euclidean distance rather than a distance from the average as a metric, but this still gives a good idea of prototypicality in Dvořák's works.

repertoire. While this flies in the face of some preconceptions that Dvořák's American works were completely driven by outside influences, it simultaneously gives rise to the notion of musicologists like Clapham and others who fully believed that Dvořák's American works were actually very heavily Czech. Of course, it should be stated again that more research needs to be done regarding this subject but it opens many doors not only to continued debunking of the myth that Dvořák's American period was completely and solely a victim of external factors but also to potential ways to distinguish uniqueness between composers.

Perhaps the most relevant avenue of exploration that should be explored in lieu of this research is that related to the creation of a tool that might discern differences in stylistic features between composers. A good example of this would be a test in which it could be determined through empirical means whether or not Dvořák's pentatonic style is unique to him within the realm of 19th-century Romantic composers. While the author cannot think of examples of cadential pentatonicism within other composers of this period, it would wonderful to create a tool or determine a process that could help facilitate an answer to this question. In the same way, by determining prototypicality and detailed stylistic features hand-in-hand with the research of folk musical style, it might be possible to understand a better and more thorough definition of "Czechness" or "Germanness" or "Frenchness" or any other possible indicator of the musical style of a culture. It is the hopes of the author that the research started by this thesis will increase and encompass not only more Czech composers but will also be able to branch into the music of other cultural groups in order to help better understand and appreciate the differences in style across all music.

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